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The **Ecologist**

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Despite recent advertising campaigns portraying itself as a pioneer of environmental responsibility, the chemical manufacturing giant, Du Pont, remains the United States' largest corporate polluter. Rather than cutting pollution at source, the company has used this green image to help it secure markets for a new range of compromise solutions, and to avoid liability for the effects of its pollution.

Dealing with Disparity: European Structural Funds in South West Spain Coordinadora Extremeña de Protección Ambiental

Extremadura is one of several areas in Spain targeted for development by the EC, in a drive to integrate so-called backward regions into the wider economic community. As a result, its highly-evolved agricultural heritage and magnificent wildlife habitats are in jeopardy, and its farming communities threatened.

Debt-for-Nature Swaps: Who Really Benefits?

Rhona Mahony

Contrary to popular belief, debt-for-nature swaps offer little benefit to indebted countries. Northern banks are the ones who profit from the deals, while protection programmes frequently fail to address the fundamental causes of environmental degradation.

Course and Effect: Golf Tourism in Thailand ...

Anita Pleumarom

A new generation of golf and tourist complexes is spreading throughout Thailand and other countries of South East Asia. Besides replicating the environmental damage already caused elsewhere, these resorts deprive local farmers of valuable agricultural land.

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Green Dollars, Green Menace

"I am scared of big money, which has always meant big destruction, big social disruption and inevitably corruption. What we need instead is a change in attitude — with the right attitudes, we could be needing less money, not more." So spoke José Lutzenberger, Brazil's special Secretary for the Environment, days before his sacking in March. He was specifically referring to the enormous "green" funds descending on Brazil under various auspices — money from the G-7 group of nations, from the EC and that anticipated from the UNCED "Earth Summit" Conference in June.

UNCED's Secretary-General, Maurice Strong, hopes that UNCED will mobilize hundreds of billions of dollars to be spent on the world's environmental problems. To some, this may seem to offer a welcome opportunity to restore global ecosystems and repair the damage of industrialization. To others, like Lutzenberger, it represents a threat: with the money comes an "environmental agenda" which, like the "development agenda" before it, reflects the interests of donor countries — interests that will now be imposed onto the rest of the world in the name of environmental protection.

Even before the first preparatory meeting of UNCED, it was clear that no agreement would be reached on the issues under discussion without the South being offered "new and additional" sources of funding. Although the demand for such funding has come from Southern governments, it is a demand that has fitted well with the agendas of many Northern interests since it effectively frames environmental problems in terms of "solutions" which only the North can provide. Underpinning the call for new funds is the view that environmental and social problems are primarily the result of insufficient capital (solution: increase Northern investment in the South); outdated technology (solution: open up the South to Northern technologies); a lack of expertise (solution: bring in Northern-educated managers and experts); and faltering economic growth (solution: push for an economic recovery in the North). Casting environmental problems in the language of development diverts attention from the policies, values and knowledge systems that have led to the crisis — and the interest groups that have promoted them. The development process itself goes unchallenged. All of which is music to the ears of politicians, corporate executives, bankers and business interests in both North and South.

Not surprisingly, the prior questions of whether money can solve the environmental problems facing us, of who benefits from capital and technology transfers, and whether increased capital flows to the South are desirable, have not been raised within UNCED. Instead, the public debate has largely been about the amounts of money on offer. Meanwhile, behind the scenes, the Northern countries have, from the outset, been manoeuvring to ensure that the funds not only remain under their control but are used to promote their interests.

GEF — The North's Little Helper

The North's preferred solution is the so-called Global Environment Facility (GEF), a scheme originally floated by the French government in 1989. Significantly, the concept of the facility and its governance and purpose were first discussed at an international level behind the closed doors of a G-7 summit meeting, thus ensuring that Southern governments would be excluded from the discussions. Whether through opportunism or by design, the World Bank became the chosen vehicle for implementing the Facility, despite opposition from environmentalists alarmed by the undemocratic structure of the Bank and its pre-eminent role in funding ecological destruction throughout the South. Only after the Bank had been given the lead role in setting up the Facility — with UNDP and UNEP as nominal partners — was a select group of just seven governments from the South invited in to discuss the GEF's framework. By November 1990, an agreement had been firmed up and in May 1991, the GEF was launched as a three year \$1.3 billion "pilot project".

By taking the initiative on GEF prior to the Earth Summit, Northern governments have effectively pre-empted discussion of alternative avenues for handling any money that comes out of UNCED. Calls by Southern governments for a new agency or for the funds to be handled within the potentially more democratic forum of an existing UN agency (where voting rights are not determined according to a country's contribution to the budget, as in the World Bank, but on a one-country-one-vote basis) are now met with the stock reply that the GEF is working well and provides an ideal vehicle for future funding. The GEF, far from being a pilot project, has in reality been a project for piloting UNCED funds into a funding body which the North knows it can trust to implement its own agenda — namely, the World Bank. As the GEF's own administrator, Ian Johnson, admits, "In the GEF, the World Bank is judge, jury and executioner".

Controlling the Agenda

Through its control of GEF funding, the North has been able to set the agenda to which GEF works — an agenda that provides an insight into how any funds raised through UNCED might be used should they be placed in the World Bank's hands. Firstly, the GEF promotes the view that environmental destruction is primarily a problem in and for the South. As Charles Abugre of ACORD, a Ghanaian NGO, points out, "The onus of 'adjustment' is seen to lie on the South and so is the guilt of failure, whilst the responsibility of the North in this adjustment is finance and supervision."¹ Instead of addressing the root causes of ecological destruction — overconsumption in the North, the ravages inflicted by the market economy and by the commoditization of nature and community — the GEF aims at "helping" developing countries "to contribute towards solving global environmental problems".

Secondly, argues Abugre, "The choice of priority areas for action is from the North, reflecting its analysis of values and causation." GEF's terms of reference restrict it to financing "environmental projects" which are of "global "— rather than national or local — significance and which would therefore be of "benefit to the world at large", its four priorities being the "protection" of biodiversity, the mitigation of global warming, the control of pollution in international waters, and the management of stratospheric ozone depletion. Few would deny that these are all areas of major concern: it is also incontestable that the chief perpetrators of the destruction in all four areas are Northern interests, acting in conjunction with Southern élites. But GEF has not singled out these areas in order to take on the world's dominant élites: rather, it is concerned with securing control of those aspects of the environment - the atmosphere, the seas and biodiversity — that are necessary to the continued throughput of resources in the global economy.

By designating the atmosphere and biodiversity as "global commons", the GEF implicitly suggests that everyone has a right of access and that local people have no more claim to them than a corporation based on the other side of the globe. Pressing problems with a direct impact on local peoples desertification, toxic waste pollution, landlessness, pesticide pollution and the like, all of which occur throughout the globe and could therefore be judged as being of "global concern" are pushed to one side whilst the local environment is sized up for its potential benefit to the North and its allies in the South. Thus, at a time when moves are being made to patent life forms and germplasm and when transnational corporations are attempting to bring patent protection under GATT, it is surely no coincidence that 59 per cent of projects approved under the first tranche of GEF funding should be for "biodiversity protection". Nor is it surprising that the chair of the GEF, Mohamed El-Ashry (previously of the World Resources Institute), has singled out areas which "include important gene pools or encompass economically significant species" as the priority for funding. Biodiversity protection is thus translated into protecting biodiversity not for its own sake but for the global economy.

Subsidizing Destruction

Likewise, the GEF uses the notion of "internalizing" ecological costs as a formula not for preventing inherently destructive projects but for providing additional resources to them in the guise of "green funding". Under its terms of reference, GEF funding should be targeted on projects in which "the overall rate of return is not attractive enough for the country to undertake it", but which "would have substantial global environmental benefits." By giving a nominal — and totally arbitrary — cost to the environmental damage that a project will cause, and by then providing funding for "suitable mitigatory measures", GEF is effectively being used to subsidize projects which would otherwise be rejected on economic grounds alone. Moreover, where the project would contravene the Bank's own environmental guidelines (for example, if the project involved the logging of primary rainforest), the Bank is able to circumvent those guidelines by using the GEF to fund the project by the back door. One example of this is the Arun Valley project in Nepal, where GEF biodiversity conservation money is indirectly supporting biodiversity destruction in the form of the Arun Hydro-Project. Other GEF projects are even more damaging in their own right. A project in the Congo, for example, is not only linked with a logging-oriented Bank-funded "Natural Resource Management Project", but has also been attacked for building roads into the area it is meant to protect, and for clearing riverside vegetation, so opening the area to logging, colonization and hunting. Clearly, as Susan George remarks, the GEF "is a fund to tack environmental tails on very nasty dogs."

Not surprisingly, the GEF is being viewed by dam-builders, loggers and the like as a new source of subsidies - provided that they can use their public relations skills to portray their projects as beneficial to the global environment. If their projects are uneconomic, so much the better. Recently, leading figures in the dam industry met in Oslo at the invitation of the Norwegian government specifically to discuss how they might tap into the GEF and any funds that are likely to be available post-UNCED. By casting "waterfall technologies" (the new euphemism for large dams) as a solution to global warming on the grounds that they do not generate carbon dioxide, the group hopes to accrue large environmental subsidies in the future.

In this, they have undoubtedly been encouraged by El-Ashry himself. Recently he told World Bank News: "We now know that the environmental costs of building dams can be considerable. The belief in the past was that environmental considerations were additional costs that could be postponed until a country became fully developed. But we've learned that these costs should be considered investments. Postponing these investments can only result in higher costs later on."2 The message to those who would build dams is clear: not only does the GEF believe it possible to mitigate the damage done by dams, but it is willing to pay for such mitigatory measures.

Such cynicism in the face of the overwhelming evidence of the destructiveness of large dams is unforgivable. For, in reality, no amount of animal rescue schemes, education programmes, biosphere reserves or direct monetary compensation can undo the ecological damage done by dams, or make good the psychological and social rape inflicted by such projects on local peoples. Internalizing these "externalities" by reducing them to figures on a balance sheet that can then be magicked away by setting them against supposed benefits, may be politically expedient but it does not make the projects any more defensible morally, ecologically or socially. For what the Bank refers to as "externalities" are flesh and blood: they are real people, real animals. They are not simply "germplasm" or "biodiversity". They bleed when bulldozers crush them. They cry when they are uprooted from their homes. They are "externalities" only in the sense that they are "external" to the Bank's interests. They are in the way.

No! to the GEF

Mainstream NGOs critical of the GEF have called for the Facility to be removed from the Bank: for further funding to be suspended; and for the workings of the GEF to be opened up to NGO participation. They also point out that the Bank's main portfolio is just as destructive as ever, despite the green rhetoric of the GEF. But does such criticism go far enough? Underlying the GEF is the prior assumption that the availability of capital is a prerequisite for addressing environmental destruction. In the debate over the GEF, that assumption has gone unchallenged by many, though not all, NGOs: the debate has been about how to transfer funds to the South and how to raise them, not over whose interests will be served by such transfers - or whether the capital is actually necessary.

To be certain, Southern élites are eager for new funds: indeed, their survival in times of high national debt relies on ensuring capital inflows. Likewise, capital flows to the South are in the interests of the North, which for years has used aid and investment to ensure political acquiescence among its partners in the South. But for the poor, the landless, those who have been marginalized by the development process and those whose livelihoods are under threat, "new and additional funds" hold no attractions. The solutions they seek are not financial, but political and cultural. Their concern is not to fund inherently destructive projects but to stop such projects. It does not cost money to reduce consumption in the North, to reclaim large plantations for peasant agriculture or to plant the trees that will restore their ravaged homelands. But it does require addressing the questions of who owns the land, who controls decision-making, who should manage the commons and in whose interest. Only by insisting that such questions are made central to the debate will it be possible to drive a stake through the heart not only of GEF but of any other financial monsters that might emerge from UNCED.

Oliver Tickell and Nicholas Hildyard

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Bank News, 22 August 1991.

Hold the Applause A Case Study Of Corporate Environmentalism

by Jack Doyle

The chemical company E.I. Du Pont de Nemours is the United States' largest corporate polluter, and the world's main producer of CFCs. Yet through intensive lobbying, timely volte-faces, and disingenuous advertising, it has cultivated a misleading image of environmental responsibility. Rather than stopping pollution at source, Du Pont tries to delay legislation against dangerous chemicals until it has had time to develop compromise alternatives, which it advertises as "environmentally enlightened". This newly-acquired green image is used as a bargaining counter in the company's rearguard actions to avoid legal liability for the effects of its pollution.

Du Pont's television commercial could easily be mistaken for a pitch to join an environmental organization. As the thirtysecond spot opens, we look out across a coastal shoreline to the distant horizon. There, barely visible in the late afternoon light, is a tiny sliver of a ship.

"Recently," intones the narrator, as a lone sea-lion looks out toward the ship from its perch on the rocky shore, "Du Pont announced that its energy unit would pioneer the use of new double-hulled oil tankers (*pause*)... in order to safeguard the environment."

Beethoven's triumphant Ode to Joy wells up in the background as a sequence of shrewdly anthropomorphized waterfowl and marine mammals appears on screen: happy ducks flapping their wings, ecstatic sea-lions clapping their flippers, a blissful whale jumping for joy. "The response," continues the narrator, "has been overwhelmingly positive." Frolicking dolphins flash past, followed by more sea-lions clapping, penguins flapping, a cloud of flamingos leaping into the sky, and a trio of jumping dolphins. The advertisement ends with a crowd of sealions applauding as the sun sets behind them. Then the tag line appears on screen: Du Pont: Better Things for Better Living.1

Applause — as this advertisement is familiarly called by its creators — is in fact highly misleading. Far from being an environmental visionary in adopting



double-hulled tankers, Du Pont was acting out of mundane self-interest. The decision of its subsidiary oil company, Conoco, to introduce double hulls came in the wake of the 1989 *Exxon Valdez* disaster, when a divided House-Senate conference was struggling to draft a bill to control oil spills. Conoco needed ships to move oil from production fields in South America to its refinery at Lake Charles, Louisiana, and it was not in the mood to anticipate Congress. A business decision had to be made; delaying it would mean paying higher construction costs.²

Nor can Dupont reasonably claim to have pioneered the technology. Doublehulled tankers have been available for more than 20 years,³ and nearly one in every six US tankers carrying petroleum products has a double bottom or a full double hull.⁴ But Conoco's first two double-hulled vessels were not launched until this year and it does not expect its entire fleet to be so equipped until the end of the century. Conoco's two new tankers were built to operate primarily in the Gulf of Mexico, where there are no penguins — nor, for that matter, sea-otters, seals or sea-lions, all of which are explicitly depicted in the advertisement as the beneficiaries of Conoco's double-hull policy.

Of course the underlying message of the advertisement is not to give information about oil tankers. Applause is what advertising people call a "corporate" piece - an image advertisement aimed at making people feel good about a company rather than motivating them to buy a specific product. It poses as a public service announcement in order to reassure the public that the sponsor is environmentally spotless. In reality, far from being a paragon of corporate environmentalism, Du Pont is a heavy-duty, industrial-strength, round-the-clock polluter. Its environmental problems are too enormous, too globally destructive, to be hidden behind a few oil tankers.

Corporate Polluter Number One

Du Pont is the single largest corporate polluter in the United States. In 1989, Du Pont and its subsidiaries reported discharging more than 348 million pounds of pollutants to land, air and water.⁵ Du Pont's total reported discharge in 1989 was about 10 million pounds greater than in 1988. It produced more chemical pollution in 1989 than Allied-Signal, Ford Motor Company, and Union Carbide combined. Its total reported pollution was 14 times that of Dow Chemical, 20 times that of Chrysler, and 30 times that of Mobil — all companies that are themselves among the top 100 US polluters.

This article is an abridged, edited and adapted version of Hold the Applause, written by Jack Doyle as a monograph for Friends of the Earth, US. Jack Doyle is the author of Altered Harvest (Viking, 1985).

Friends of the Earth (US) estimates that Du Pont and its subsidiaries worldwide are polluting the earth at the rate of at least 1.6 million pounds a day, every day. This is a very conservative estimate, based on Du Pont's annual Toxic Release Inventory (TRI) reports to the US Environmental Protection Agency (EPA) for its facilities in the United States and on

extrapolated estimates of Du Pont pollution abroad. Du Pont's reported pollution levels are only the tip of the iceberg, because the TRI covers only a small fraction of all chemicals - 321 out of the roughly 60,000 in use today.6 And TRI reporting requirements do not extend to mines, tank farms, oil and gas drilling, or incinerators, all of which Du Pont and its subsidiaries operate.

Shifting the Load

When questioned about their company's unparallelled pollution record, Du Pont's directors are curiously ambivalent. "While we believe our present emissions levels are safe," chief executive Ed Woolard said in his 1990 message to shareholders, "we will voluntarily reduce our toxic air emissions by 60 per cent (using 1987 as a base year) by 1993." Du Pont has also stated that it intends to cut wastes by 33 per cent by 1993 and reduce emissions of known carcinogens by 90 per cent by the year 2000.

Leaving aside the question of how Woolard can possibly believe that Du Pont's present emissions are "safe", we may applaud any good-faith effort to make them even more safe by reducing them. Many of these cuts, however, will not be achieved by a reduction at source: rather they reflect a change in the company's waste disposal strategy. Du Pont is shifting its toxic load from the more visible landfill and out-the-

end-of-the-pipe techniques to those which are less conspicuous and perhaps more problematic in the long run. A higher proportion of Du Pont's waste is now being disposed of through deepwell injection and high-temperature incineration. Other waste flows are being treated, but are not fully decontaminated; they are still being released in toxic and

harmful quantities.

Du Pont operates at least five incinerators in the US, some of which burn both their own and other company's wastes. One of these is located at Du Pont's Chambers Works complex in Deepwater, New Jersey. This incinerator burns 12 to 13 million pounds per year of Du Pont's liquid hazardous waste. Even at optimum



to a new warning system. For those whose homes lie near a Du Pont plant, "Better Living" means living in a state of constant apprehension.

operating levels and efficiencies, the incineration process still emits about 1,200 pounds of unburned hazardous material into the air each year. Hazardous waste incineration also produces toxic chemicals that are formed by the combustion process - chemicals that EPA says may be even more toxic than the original hazardous waste.7 Du Pont is currently applying for approval to build and operate a new \$40 million commercial incinerator at Chambers Works, capable of burning 70 million pounds of hazardous waste per year. Once operational, the new facility is expected to generate some 7,000 pounds of unburned hazardous waste every year.

Du Pont also leads all other US companies in use of deep-well injection, a waste

disposal technique it has been using for more than 30 years. In 1989, Du Pont injected 254.9 million pounds of toxic wastes into underground geologic formations - more waste than most Fortune 500 companies generate in toto each year. The company's wells - there are 39 nationwide that dispose of "Class 1" hazardous wastes - range in depth from 2,500 feet to more than 10,000 feet:8 More than 30 different kinds of chemicals, many of them acutely toxic, are injected underground at Du Pont's wells.

The operating premise of underground waste disposal is that a porous geological zone deep below the earth's surface (far below any aquifer) is "sealed" above and below by impermeable strata, and waste injected through a tubular well shaft to this porous zone will be safely contained within the formation for at least 10,000 years, according to EPA requirements. But underground injection is an uncertain science, based almost entirely on computer models that are themselves built on untested assumptions; nobody has much experience at monitoring the migration of hazardous wastes at great depths. "Operators of injection wells may know where the wastes are injected," a Congressional Office of Technology Assessment staff memorandum noted in 1983, "but they do not know with confidence where the wastes will ultimately end up."9 By 1989, the US General Accounting Office had re-

ported at least 23 cases in which drinkingwater contamination was known to have been caused by deep-well injected oil and gas wastes.10 In other cases, excessive underground gas generation has led to blowouts and the return of waste to the surface.11

Du Pont has several times tried to avoid legislation designed to regulate injection

A Hardened Recidivist: Du Pont and the Law

Du Pont has never seemed unduly worried about brushing with the law. Between May 1989 and July 1991, Du Pont paid out nearly a million dollars per month in environmental and public safety fines, penalties and lawsuit settlements. Fines for mishandling chemicals or failure to uphold safety standards are usually so low that the company is often prepared to repeat the offence.

Contamination

- CALIFORNIA: Underground storage tanks at one of Du Pont/Conoco's Kayo gasoline stations in Sacramento County have been leaking benzene, toluene and xylene into the groundwater. In March 1990, Conoco was fined \$125,000 and in June 1991, was ordered to pay \$137,500 for failing to control the leaks. This is just one of 25 Conoco sites state wide where leaking underground storage tanks are polluting groundwater.¹
- FLORIDA: As the world's largest producer of titanium oxide, Du Pont has been mining the raw material, ilmenite, for more than 40 years in north Florida. In June 1990, the state Department of Environmental Resources found that sulphuric acid in mine holdingponds had seeped into the stream. Du Pont was fined \$20,000. Three months earlier Du Pont had been fined for a similar discharge in another stream nearby.²
- NEW JERSEY: In July 1990, the Environmental Protection Agency charged Du Pont with mishandling toxic solvents and corrosive materials at its Chambers Works plant. Du Pont has agreed to pay a \$1.85 million settlement. In 1988, Du Pont had been fined \$23,000 for allowing tetraethyl lead emissions to pollute the same plant.³
- MICHIGAN: The state has filed a complaint against Du Pont for its role in dumping hazardous wastes in Stevens landfill in Bedford, between 1957 and 1965. More than one million dollars have been spent removing leaking drums and contaminated soil from the site.⁴
- IN THE FIELD: In March 1991, Du Pont was fined \$2.4 million for distributing pesticides contaminated with atrazine, an active herbicide ingredient, capable of damaging other agricultural crops and leaving a dangerous residue on food crops.

False Declarations

Du Pont has also been known deliberately to falsify information concerning its toxic emissions, even putting its own workers' health at risk.

- UNDERGROUND: In April 1991, Du Pont's mining subsidiary, Consolidation Coal, was accused of 435 separate cases of tampering with coal-dust samples, which are used to monitor permissible respirable dust levels in underground mines. It was found guilty on six counts and fined \$20,000.⁵
- NEW YORK: In November 1989, Du Pont Semiconductor Products (DSP) was indicted by a

Dutchess County grand jury for intentionally falsifying waste-water monitoring reports. DSP has pleaded not guilty.⁶

Liability Deals

Du Pont is most wary about being sued for damages, since the sums involved are likely to be a true reflection of the human and environmental damage caused. It is keen to negotiate deals with governments where it is absolved of any liability.

- OKLAHOMA: Du Pont's Conoco is in the process of relocating about 400 residents of Ponca City, whose homes and property were contaminated by seepage from Conoco's refinery and tank farm. In a settlement on the scale of the more celebrated Love Canal case, Conoco agreed to pay the residents \$23 million.⁷
- NORTH CAROLINA: In May 1991, eight lawsuits seeking \$500 million in damages were filed against Du Pont for pollution allegedly caused by a Dacron manufacturing plant in Lenoir County. Neighbouring property owners contend that the plant has polluted the air, land and groundwater with chemicals including trichloroethane, triethylene glycol, and dioxane.⁸
- MEXICO: In Matamoros, near the Texas border, Du Pont has a 37 per cent interest in the Quimica Fluor chemical plant. In the event of the accidental release of a lethal hydrogen fluoride cloud, up to 40,000 people could be affected. Du Pont might be able to escape all legal responsibility, however, thanks to a pending agreement with the Mexican government who would expropriate and evacuate a two-milewide buffer zone around the plant—thus eliminating any incentive for Du Pont to improve safety standards. Quimica Fluor has already paid out \$2.16 million to neighbouring farmers for crops damaged by chemical leaks⁹.

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All examples taken from Hold the Applause.

wells. It has asked the EPA to exempt over 30 wells from strictures imposed by the Resource Conservation and Recovery Act of 1976,12 and it has delayed proposed legislation in the state of Louisiana that would require the monitoring of the movement of underground wastes.13 Yet even while fighting for its right to pump toxics underground, Du Pont says it plans to stop deep-well injection of wastes by the year 2000. This is a less than totally reassuring pledge. If the technique is foolproof for 10,000 years, why stop now? On the other hand, if it is as uncertain as the evidence seems to suggest, why not stop immediately?

Dupont's ambiguous reassurances are typical of a more general strategy designed to give the impression that the company is going beyond the call of duty in making voluntary and unnecessary sacrifices to achieve high environmental standards - and consequently that industry as a whole is responsible enough to regulate itself. The reality is that Du Pont fights tooth and nail in the lawcourts and in the lobbies of Washington to resist more stringent environmental standards; only when the cause is clearly lost, will Du Pont pre-empt anticipated legislation by announcing over the nation's airwaves its decision to clean up.

The Ozone Game

Nowhere is this better illustrated than in Du Pont's response to calls for the phaseout of chlorofluorocarbons (CFCs). Du Pont's keen eye for market opportunity and adroit backstage manoeuvring have managed to turn a potential fiasco into a company triumph.

If any one company can be held accountable for the hole in the ozone layer, it is Du Pont. It was a Du Pont chemist, Thomas Midgely Junior, who discovered CFCs in 1928, and the company began marketing them in 1931 under the tradename Freon. Soon Du Pont was the world leader in fluorocarbon chemistry, producing hundreds of compounds used in aerosol sprays, insulating foams, cleaning agents, industrial and commercial chillers, and automobile air conditioners. For more than 40 years, Du Pont enjoyed a near-monopoly in many of its CFC lines. And it held a dominant position in CFC production as a whole, accounting for half of the US market and, at times, more than a fourth of the global market.14 It is a position that Du Pont has



"Stop All CFC Production Immediately", is the message strung across Du Pont's chemical plant in Luxembourg by protestors. But Du Pont are playing for time in which to develop and market their new range of chemicals.

been determined not to forfeit, and it has played its cards astutely.

In 1974, scientists studying the upperatmosphere ozone layer, which protects the earth from being bombarded by excessively high levels of ultraviolet light, made the distressing discovery that the chlorine released by CFCs was destroying ozone. Within four years, aerosol sprays were banned in the United States, causing an immediate drop in national CFC demand of 50 per cent - a major blow to Du Pont and other US producers. Du Pont vigorously fought the ban and argued for a non-regulatory approach to CFCs in general. Typical were the company's 1975 double-page newspaper and magazine advertisements, warning darkly that "to act without the facts - whether it be to alarm consumers, or to enact restrictive legislation — is irresponsible."15

But while it was calling for "further study" and playing down the ozone problem, Du Pont had quietly begun researching CFC alternatives as early as 1975. By 1979 several promising candidates had been identified. The main problem was that none of them could be produced as cheaply as CFC-11 and CFC-12, the two chlorofluorocarbons it was then marketing.¹⁶ Meanwhile the CFC industry began to recover as world demand grew for nonaerosol uses. By the mid-1980s, demand for refrigerants, cleaning agents and foam insulation was beginning to offset the lost aerosol market.

In 1981, Du Pont abruptly "de-escalated" its research into alternatives. The arrival in Washington of President Reagan's profoundly anti-regulatory administration clearly provided an incentive for industry to let CFC-substitutes research slide. After spending \$3 to \$4 million a year on CFC substitutes in the late 1970s, Du Pont spent "practically nothing" on substitutes from 1981 to 1985, "because it doubted that further regulatory restrictions on CFCs were forthcoming, and because the substitutes were uniformly more expensive."17 Du Pont went ahead with plans to build new CFC production facilities in Japan — and began studying the feasibility of doing the same thing in China, where the long-term market potential for CFCs seemed almost limitless.18 By 1987, Du Pont was producing more than 500 million pounds of CFCs, worth about \$600 million in annual sales.19

In 1985, a team of British scientists discovered a "hole" in the ozone layer over Antarctica. Du Pont resumed research on CFC alternatives in late 1986. The research budget was \$5 million that year — and \$10 million the next. By late 1986, with an international consensus beginning to emerge on the need for CFC restrictions — and with the EPA becoming more aggressive under the leadership of its new chief, Lee Thomas — Du Pont could read the writing on the wall. But Du Pont argued emphatically that any reguIt is not only in the US that Dupont meets opposition to its chemical plants. In 1991 there were massive protests in Londonderry, Northern Ireland against the construction of a second Du Pont incinerator in the town. Du Pont, hoping for state aid , did not calculate that, in a city riven by sectarian violence, every political party and the broad mass of the population would oppose the project.

latory approach to CFC reduction had to be international. Du Pont supported the Montreal Protocol, which called for global CFC production to be cut in half by mid-1999.

Then in March 1988, Du

Pont stunned its competitors and many in the environmental community by announcing unilaterally that it would stop producing CFCs. The announcement made front-page headlines and brought praise for Du Pont from all quarters. What the public did not realize, however, was that the company had its own interests very much in mind — and its eye very much on the bottom line.

Du Pont's business was on the decline. Management was looking for a way to boost profitability and the Montreal Protocol provided the means of engineering one, by creating what was essentially a new market. If Du Pont timed things right, it could dominate the "new" market for CFC-substitutes with its own products. "When you have \$3 billion of CFCs sold worldwide and 70 per cent of that is about to be regulated out of existence," said Joseph Glas, director of Du Pont's Freon division, "there is tremendous market potential."20 CFC-substitutes might be costlier to produce, but under the right circumstances they would sell at prices high enough to be profitable.21 What Du Pont needed was a mechanism to insure that those price levels would be achieved.

CFC Lite!

Du Pont's announced CFC phaseout in 1988 was specifically designated for "fully halogenated CFCs", a scientific term that came to determine which chemicals were given specific phaseout deadlines under the Montreal Protocol and which were not. In fact, some observers speculate that in-



dustry, with government complicity, deliberately redefined "chlorofluorocarbons/fluorocarbons" as three new chemical categories that subsequently became the basis for assessing which chemicals should be phased out and which should become the officially sanctioned substitute.²²

The three new categories were: 1) fully halogenated CFCs; 2) partially halogenated CFCs, now called HCFCs — or "soft CFCs"; and 3) non-chlorine containing hydrofluorocarbons, or HFCs. Du Pont, however, had already been producing some HCFCs for years — in particular CFC-22, now euphemistically renamed HCFC-22. This partially halogenated CFC was used extensively by Du Pont in the manufacture of Teflon and other polymers and was sold directly by Du Pont for use in building air conditioners and commercial refrigeration equipment.

There was just one problem — but it was a serious one. HCFCs and HFCs are, themselves, environmentally destructive. HCFCs contain chlorine and thus are destructive to ozone, although much less so than CFCs. HCFCs also have heat-trapping properties and thus contribute to global warming as well. HFCs, on the other hand, do not contain chlorine — and do not degrade ozone but some do contribute to global warming.

Du Pont soon began to advance the argument that the ozone-depleting potential of the substitutes was so low when compared to CFCs that they could serve as interim or "bridging" chemicals until safer alternatives could be developed. In fact, the Alliance for Responsible CFC Policy — an industrial body stated flatly that HCFCs "can be used well into the next century with no additional impact on peak chlorine levels and no effect on the date by which pre-Antarctic ozone-hole chlorine concentrations can be achieved."²³

That did not square with the EPA findings, however. In 1988 and again in January 1990, the EPA had noted that, depending on the rate of use, HCFC substitution would cause increases in atmospheric chlorine of between 0.5 and 2.6 parts per billion.24 Even very small rates of HCFC substitution might prompt larger changes in the atmosphere. "It only took a chlorine concentration of about one part per billion to trigger the Antarctic ozone hole," notes Liz Cook, Friends of the Earth's ozone analyst. "HCFC substitution contributing chlorine at that level, or even lower, could prevent ozone recovery to pre-Antarctic-hole levels."25

Nevertheless, with the Montreal Protocol up for review in 1990, some industry leaders unhesitatingly advocated longterm reliance on HCFCs and HFCs. During consideration of the 1990 US Clean Air Act amendments, Du Pont lobbyists argued that the chemicals should not be phased out before 2040. Tony Vogelsberg, environmental manager at Du Pont's Freon division, explained: "We need a 20-year life cycle to pay for these investments. So if you say 'phase out by 2010,' that means 'do not build after 1990'."²⁶. Du Pont's lobbying bore fruit. As things stand now, under the Montreal Protocol, a non-binding resolution calls for HCFCs and HFCs to be phased out no later than 2040, while the Clean Air Act calls for a phase-out of HCFCs by 2030.

In January 1991, at the Grand Hyatt Hotel in New York, Du Pont Vice Chairman E.P. Blanchard launched the new line of refrigerants (HFCs and HCFCs) under the tradename "Suva," calling them "the first commercially available family of environmentally acceptable refrigerants."27 The accompanying advertising campaign, which featured a forlorn penguin standing on a block of ice, described the chemicals as "environmentally enlightened". Du Pont also began securing major commitments from industrial customers, notably General Motors, who agreed to use HFC-134a in its automobile air conditioners by 1994. Du Pont have thus ensured that their CFC replacements are woven inextricably into the fabric of the world's economy.

By deploying its preferred alternatives so swiftly and thoroughly, Du Pont as the dominant market player was, in effect, determining what the range of commercially available CFC alternatives would be. By the time questions began to emerge, commitments worth hundreds of millions of dollars had already been made; it was highly unlikely that the Bush administration would move aggressively to question that investment. Du Pont has insisted throughout the CFC debate that the only alternatives available for most CFC applications are those that it is currently pursuing. One Du Pont representative told a congressional committee: "We know of no viable substitute for HCFC-22."28

Yet, since 1988, research and development of other alternatives has made impressive progress. In the electronics solvent market, for example — where Du Pont and others had predicted that coming up with an acceptable CFC replacement would be all but impossible ²⁹ — at least three alternatives are now in successful use: warm soapy water (IBM), terpenes from orange rinds (AT&T), and circuit board production that does not need solvents (Apple, Northern Telecom).

"Industries which now use CFCs, such as the refrigerator companies, car manufacturers and electronics producers," says Arjun Markhijani of the Institute for Energy and Environmental Research, "often have more appropriate incentives than (do) chemical companies for developing non-chemical alternatives to CFCs.

Such alternatives include water-blown foam, helium and solar refrigeration, solar-powered ventilation for cars, vacuum insulation for refrigerator walls and water-based cleaning for most industrial solvent applications."30 But many of the consuming industries appear to be taking a passive role, letting Du Pont and other chemical companies develop "solutions" - and call the tune. "Even though autoair conditioning is the largest source of CFC emissions in the US, the development of entirely new cooling systems appears to be receiving a much lower priority than it should, because manufacturers anticipate that 'drop-in' CFC substitutes will be available for present air conditioning designs."31

In the light of recent findings that the deterioration of the ozone layer is proceeding even faster than had previously been thought, it is all the more urgent that Du Pont and other producers should stop producing CFCs and "CFC-Lite" substitutes as soon as possible. Yet the world's largest CFC producer is now elaborating a new generation of capital, plant and equipment that will produce millions of pounds of chemicals destined to contribute to global warming and continued ozone depletion.

Dodging Liability

Although Du Pont is an enormous company and was founded nearly 200 years ago, it is by no means a dinosaur; indeed it has shown itself to be remarkably adroit at handling the new realities of environmental issues. It has learnt over time to become extremely sophisticated in dealing with potentially difficult legislation and the vicissitudes of public opinion. Du Pont is usually at least one step ahead of its adversaries in strategic thinking and public-relations planning — and there are few corporations anywhere with deeper pockets.

In legislative battles, Du Pont typically embraces the broad concepts that make the headlines while fighting doggedly over details and technical issues that the public rarely hears about. Those details, however, usually determine how effective new laws and regulations will be. Du Pont has used this approach time and time again, influencing the final versions of the Clean Water Act, the Toxic Substances Control Act, the Oil Spill Prevention Act of 1990 and others.

Politically, part of Du Pont's overall

strategy appears to be one of buying time - stretching things out while it develops marketing strategies to take advantage of changing situations. But Du Pont is not afraid to be openly confrontational on matters it deems important to its future, nor is it timid about spending money in the political arena to achieve its objectives. For example, in the bitter battle over California's "Big Green" referendum in 1990- a sweeping state-wide environmental-protection measure - Du Pont reported spending \$379,998 to defeat the initiative, one of the largest amounts reported by any of Big Green's corporate opponents.32 Among its many other provisions, Big Green would have required a rapid phaseout of CFC use in California.

In the long battle to pass the federal Comprehensive Environmental Response, Compensation and Liability Act of 1980, better known as "Superfund", Du Pont supported the idea of industry creating a pool of money to pay for cleaning up hazardous waste sites. The resulting compromise measure provided \$1.6 billion over a five-year period, with 88 per cent of the money coming from the chemical industry. Some industry leaders thought Du Pont had sold them out. But in fact Du Pont had negotiated a quid pro quo of immeasurable value not only for itself but for the entire chemical industry. Congress and the White House, in return for getting a commitment from industry to fund clean-up operations, agreed to drop several liability provisions, one of which would have allowed the victims of toxic wastes to sue chemical manufacturers in federal court.33

Fighting to the death over liability has, in fact, become something of a Du Pont speciality. Whether in dealings with the EPA and Justice, or in settlements with citizen groups such as that in Ponca City (see box), liability is the one issue that Du Pont treats as crucial and it will go to great lengths to resist the encroachment of compromising laws or otherwise unfavourable precedents. Du Pont's concern reflects the large difference that exists between the level of fines normally imposed for environmental offences and the level of compensation paid to victims; compensation is assessed according to the amount of damage done.

In the legislative fight over the Oil Spill Prevention Act of 1990, some of the most important provisions — those pertaining to oil spill liability — were altered or weakened, largely through the efforts of the American Petroleum Institute (API) of which Conoco is a leading member. API always favoured a cap on liability, and pushed for generous defences against liability, including broad "act of God" Provisions.³⁴ A measure proposing that liability should be split between the owners of the oil and the owners of the tankers was adopted by the House of Representatives, but was killed off by intense lobbying from the API.

Polite Politics

A number of activists and environmentalists who have dealt with Du Pont and Conoco over the years give company officials relatively high marks for their willingness to meet with consumers and environmentalists and for a general willingness to recognize that times are indeed changing and that environmentalism is here to stay.

That is all to the good. But it may represent little more than the new environmental etiquette of the 1990s. It costs nothing for Ed Woolard and lesser Du Pont officials to meet with environmental and community leaders and commit themselves to a process of "meaningful dialogue." Du Pont's environmental image is deliberately constructed to suggest that industry is capable of keeping its house in order without government interference. Only business can marshal the resources to clean up the environment, Woolard told the New York Times last year. "The environmental groups cannot solve any of these problems," he said. "Governments can't do it. Corporations have to do it."35

In one sense, he is clearly right. Nobody in West Virginia's pollution-plagued Kanawha Valley can make the air there fit to breathe until Du Pont decides to make its Belle plant state-of-the-art. But Woolard's words are worrisome to those who think that industry already has too much power over the environment. They are uncomfortable with the idea of letting Du Pont promote itself as caretaker of the community, protector of the global commons - deciding which chemicals are safe, which waste-disposal system is benign, or what is meant by an "orderly transition" away from dependence on chemicals that have already begun to dissolve the Earth's natural sunscreen. These are matters that are properly the province of local people, and of governments acting on behalf of the people.

Corporations, focused on the bottom line as they inevitably must be, have always looked for ways to externalize costs — in effect asking society as a whole to pay the bill for things that might jeopardize a company's competitive position. Nothing fits the definition of an externalized cost better than pollution. Du Pont would not be cleaning up today, or setting goals for waste minimization and emissions reductions, if it were not for government action; if it were not for citizen, environmental and political leaders who pushed Congress to enact laws such as Superfund which forced companies to acknowledge and begin dealing with some of their externalized costs.

In the past, all the "externalities" that flowed from the chemical cornucopia of unchecked inventiveness were "free." Now the bill must be paid. It is Du Pont's responsibility to ensure that social and technological negligence of that kind does not occur again. The challenge to Du Pont and the rest of the chemical industry is, at its core, simple enough: Do no harm.

This is a daunting demand. But until Du Pont demonstrates that kind of commitment — one of real substance rather than style, and one that does not rely on Madison Avenue to communicate its message — we should hold the applause.

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A valley in the Extremadura region of south west Spain: a characteristic dehesa landscape of dry pastureland peppered with oak trees and fringed by wooded mountains. The treeless strip in the middle ground contains cultivated fields and a few barely distinguishable farmhouses.

Dealing with Disparity European Structural Funds in South West Spain

by

Coordinadora Extremeña de Protección Ambiental (CEPA)

Although Extremadura is one of the poorest regions of Spain, it can boast complex agricultural systems dating back centuries, which have maintained a rich and stable habitat for many of Europe's rarest wild animals. But the pressures of industrialization and centralized food production, accelerated by Spain's entry into the European Community, have undermined the region's economy. The European Structural Funds allocated to Extremadura are designed to develop the region and bring it into line with the rest of Europe; but in so doing, they threaten to destroy a proven agricultural tradition and despoil a unique landscape.

The European Community (EC), as well as giving development aid to Third World countries, also provides aid for its own less-favoured areas. Whereas 2.24 billion ECU were given to less developed countries in 1988 by the EC, some 12 to 14 billion ECU are spent in Europe every year under the heading of Structural Funds, an amount which is due to be increased in 1993. Three separate funds are involved: the Social Fund, the Agricultural Guidance Fund, and the Regional Development Fund, which is the largest of the three.¹

The stated purpose of this funding is to help redress disparities between regions by integrating them into the wider economic community. Consequently, many of the key projects are directed at improving communications. In Portugal, the new Porto to Lisbon motorway was built passing through the Serra de Aire Candeeros National Park; Ireland's first motorway is proposed between Dublin and Wexford; in Spain, a high-speed railway will be gouged through the Sierra Morena mountains to link Madrid and Seville; and work has started on a road stretching from Pau, in France, to Zaragossa, in Spain, via a tunnel in the Pyrenees.²

Such schemes should be seen in the context of the EC's long-distance transport infrastructure programme, which envisages, for example, a doubling of the French motorway system by the year 2000. Along this communication network, people and goods will be ferried to and fro in a drive to generate greater wealth for the

CEPA is a regional federation of small groups in Extremadura. It can be contacted at APDO. 501, E-06800 Mérida, Spain.

community. More tourists from the richer areas will be tempted to sample the vanishing charms of the deprived hinterland. More businessmen will hop from city to city, seeking out markets, competing for contracts and attending conferences. And more goods will be transported to distant urban depots for eventual redistribution to consumers throughout the length and breadth of the continent.

The economic law of comparative advantage is used to justify this pattern of intensive production and extensive distribution. Europe encompasses wide variations of geology, soil and climate. Agricultural

wealth, it is argued, is created by growing only those products which a particular region can market at an internationally competitive price. All other produce, however traditional, should be gradually abandoned in favour of cheaper imports. The west of Britain, for example, should concentrate on lamb and cattle, the east on wheat, Denmark on bacon and butter, the south of Italy on wine, Spain on early fruits and vegetables, the Channel Islands on tomatoes and so on — the correct harmonization of regional monocultures will provide food for all at unbeatable prices.

As this model of development has progressed, however, it has become clear that many areas which have supported a vigorous rural population for centuries, have no obvious comparative advantage at all. When communications are opened up, local produce is rendered uncompetitive by cheap foreign imports, and neighbouring markets for surpluses are ceded to competitors. France, although a rich country, has suffered disproportionately in this respect. Because of its central position in Europe, its markets are easily accessible and many of its products lack the competitive advantage afforded by more extreme climates. English meat, Spanish fruit and vegetables and Italian wine have all succeeded in supplanting home-grown produce over the last 25 years, and there have been consistent and often violent demonstrations by farmers who have seen their standard of living whittled away by foreign competition.

In Spain, Portugal and Greece, latecomers to the EC, the development of a modern transport system and the process of absorption into the free market are less



Spain: The Price of EC Membership

In economic terms, joining the EC in 1985, after years of isolation under the Franco regime, has been problematic for Spain. Industry is undergoing a difficult conversion, and in the process many small firms have closed down or been absorbed by big companies, most of them foreign. The agricultural sector has also been badly hit, as hopes of easy markets and advantages for Mediterranean products have not materialized. Small farms in particular have suffered badly from EC policies which link price support to output, and hence favour the larger, more intensive farms.

Before joining the Community, the protection provided by Spain for its traditional production allowed farming economies to subsist in many areas. In northern Spain, which has a mild climate and high average rainfall, the industrial areas alternate with green valleys and mountain areas, where the traditional basis of the economy has long been cattle raising. The family farms which concentrated on dairy products and extensively-reared, high quality meats, are now finding themselves unable to compete in their own domestic market with the produce from intensive dairy farms in The Netherlands, France and other community members. EC standards favour low quality intensively produced milk, against milk produced by extensively grazed cattle, which has a higher fat content. Though Spain is not self-sufficient in dairy products, EC-imposed milk quotas will force more than 58,000 small farmers out of business.3 Already, rural communities and cultures in northern Spain, selfsufficient and prosperous until recently, are beginning to break down as a result of the competition from "efficient" Dutch in-

tensive farms. Eucalyptus plantations are the most likely substitute for abandoned grasslands (see box, p.93.)

In central Spain, the two Castillas wide deforested plains with poor soils and an arid climate - have for centuries been Spain's cereal granary. However, their low yields make it difficult for the Castellanos to compete with production in other European countries, so the future of local communities, practising extensive systems of wheat production, is under threat. These areas are also the last refuge of several species of grassland bird. Already dams are being built wherever possible to hold water in order to irrigate the plains. An EC farm improvement programme (Council Regulation 1118/88), approved soon after Spain joined the EC, provided funds for new irrigation schemes. The planners have never satisfactorily explained precisely which crops will benefit from these projects; the area's unsuitability for potentially profitable irrigable crops such as strawberries and vegetables implies that the land may be destined for poplar plantation.4

In Mediterranean Spain, agriculture is also suffering from EC policies. Olive oil and wine are surplus products within the EC, and there are incentives to abandon or uproot vineyards (regulation 3775/85) while olive groves are either being abandoned or "modernized" by replacing older trees with younger, more uniform varieties. Olive oil in particular is now faced with competition from cheap vegetable oils which are a by-product of grains grown mainly for fodder for intensive livestock raising. In Extremadura, a four million hectare region in the south west, the largest dam in Europe was recently completed, to



Pulpwood Plantation in North West Spain

Spain's industrialization and its entry into the European Community has had a radical effect upon its countryside. At the beginning of the century, the dominant tree-cover in Spain consisted of deciduous hardwoods, such as oak, beech and chestnut. This woodland was central to the rural economy, regulating the climate and the soil condition, and yielding a wide variety of products, including high quality timber, nuts, fodder, cork, charcoal, fuelwood and tannin.

However, these are not products with an international market, and between 1940 and 1980, Franco's regime began to encourage investment in large-scale plantations orientated to the more lucrative pulpwood industry. Forestry engineering journals stressed the climatic advantages of northern Spain for rapid growth, and private land-owners were wooed by generous grants and the prospect of a quick return upon investment.

The programme became a veritable bonanza. In 1955, pulpwood for making paper and conglomerated board constituted only 7.2 per cent of the timber industry; by the late 1980s, the figure was over 50 per cent. Already, by 1959, 65 per cent of all wood production in the Cornisa Cantábrica area of north west Spain consisted of three fastgrowing species, Pinus insignia, Pinus radiata and Eucalyptus globulus; by 1988 the figure had risen to 90 per cent. Faster growing species suitable for pulpwood now occupy over five million hectares throughout Spain, while deciduous

hardwoods occupy only 1.9 million hectares.

The effects of the plantations upon the local economy have been severe. Forest fires have become more frequent because the undergrowth is not grazed, and erosion has increased, not least because of the "rippers", or down-slope subsoilers, which are used to prepare the ground. The establishment of monocultures has caused a rise in the incidence of certain pests - and hence in the use of pesticides- together with a decline in the numbers of most other species of animal and plant. Common land has been swallowed up, depriving farmers of pasture and contributing to rural depopulation. Turning land over to a forestry regime brings in few new jobs: in Cornisa Cantábrica, where forestry occupies over half the land, it only generates five per cent of total agricultural production in economic terms.

During the early 1980s, which saw a measure of devolution of political power to the provinces, enabling local people to voice their objections, there were signs that forest policy would move away from eucalyptus and pines. But these hopes were dashed in 1985, when Spain joined the European Community. The Common Agricultural Policy foresees the bulk of the continent's milk production coming from northern countries such as The Netherlands, Denmark and France. Spain, which currently produces eight million tonnes of milk, was awarded a quota of only 4.8 million tonnes. About 58,000 small farmers are likely to be put out of business, many of them in the northwest. The only option being offered by the EC is replacement of pasture by

forestry plantations.

To process additional supplies of pulpwood, two new industrial complexes, producing cellulose, paper and thermal energy, are planned in Galicia: EuroGalicia Forestal, backed by the German multinational Feldmühle Aktiengesellschaft; and Papelga SA, backed by the Finnish firm, Tampella Oy. Together they propose to plant 104,000 hectares in eucalyptus and pine, and have applied for grants totalling \$695 million, mainly from EC Structural Funds. This enormous sum, which does not include the money invested by the parent companies, would provide less than a thousand new jobs at a cost of over \$700,000 per job.

Over 34,000 Galicians have signed a petition against the proposed factories, and all local environmental groups are opposed to it; but the Galician government is still continuing with the project, presumably because it is the only option available within the framework of EC structural plans. In Spain, as in countries as diverse as Argentina, Brazil, Chile, India, Indonesia, Portugal, Scotland and Thailand, industry demands that traditional rural economies be sacrificed to satisfy its insatiable appetite for paper and pulp.

The information for this box was provided by Helen Groome of Euskal Herriko Nekazarien Elkartasuna (EHNE), Bilbao, Euzkadi, and Ramón Valera Diaz of Asociación para a Defensa Ecoloxica de Galiza (ADEGA), Coruña, Galiza, Spain.

provide irrigation for plains at present covered by vineyards and olive groves. Farmers are at a loss as to what crops they are supposed to be planting on this new irrigable land.

These changes are reinforced by altered patterns of consumption. In the market place, traditional varieties of apples are no longer available because the trees are being replaced with French varieties that provide a uniform crop and can be kept in central distributor fridges for much longer; the dairy farmer can no longer sell fresh milk directly, because of new sanitary provisions.

In the face of competition from intensive agriculture in other European countries, Spain is losing its small-scale, sustainable, agricultural production; its farming population is being forced off the land, its rural communities are disintegrating, and the environment is under threat. But this is not a natural process of development, nor is it merely the logical outcome of fair and reasonable competition. The disparities between regions that the EC Structural Funds aim to redress have been generated and exacerbated by agricultural policies identical to those financed by these same funds.

Extremadura: Uprooting the Past

In Spain, as elsewhere, the only way for farmers to survive is to abandon traditional techniques, to expand, to specialize and to intensify. If you can't beat them, join them. After a period of being a net contributor to the EC, the Spanish government jumped at the chance of re-



Extremadura's rivers are renowned for their beauty and for their abundant wildlife, which includes otters, fresh water turtles and rare species of amphibians and fish. Power has been harnessed over the centuries by numerous small water mills, served by dams of no more than two metres in height...

couping its losses by obtaining funding for development programmes. The National Plan for Regional Development, approved in 1989, was rapidly produced with little opportunity for consultation. Even when the details of the plan were being worked out by regional authorities, there was no attempt to involve local groups. It was difficult, or impossible, for local representatives to get access to information before plans were approved, and even after approval, monitoring their implementation has not been easy. The plans were drawn up within the constraints of the Community Support Framework, strongly biased towards large infrastructural works, agricultural intensification and mass tourism. A draft report criticizing the potential negative consequences of the plan was not adopted by the Parliamentary Committee.5

One of the regions covered in the plan is Extremadura, a sparsely populated area the size of Switzerland, bordering the south of Portugal. Agriculture accounts for almost 30 per cent of employment in Extremadura, and traditional agricultural systems have developed over the centuries to interact with the natural environment rather than destroy it. Agricultural activities are limited both by the fragile soils, which are generally poor and shallow, and by the difficult climate, consisting of long dry summers and mild winters with erratic rainfall.

In mountain areas and on steep slopes, very vulnerable to erosion, a dense Mediterranean forest with thick underbrush has been preserved. This land provides browsing for livestock (mainly goats), game, cork, honey, fruit, herbs, mushrooms, and, in higher rainfall areas, firewood and selective timber extraction. The areas are often communally owned, or else privately owned and rented out to shepherds for summer grazing. Transhumance of livestock allows for optimum use of these mountain areas in summer and of lowland pastures in winter.

In the plains, generations of shepherds have shaped the open wooded mediterranean grasslands, known as dehesas. In this landscape, which resembles a cross between parkland and savannah, scattered evergreen oak trees, the remnants of ancient forests, fulfil an important environmental and economic role: they maintain soil fertility and the hydrological balance by preventing erosion and regulating the microclimate; their abundant mast and foilage provide feed for livestock in winter; and they supply cork, firewood and high quality charcoal. The trees have been carefully selected for their sweet acorns, and they are pruned to increase yields. Tree regeneration is left to nature, but is helped by shepherds, who protect young trees by simple methods such as placing dry thorny branches around them to discourage browsing of tender shoots.

Dehesa management involves a careful balance of agriculture, herding and forestry. Extensive grazing improves grassland and keeps scrub at bay, but scrub invasion is also controlled by rotational ploughing. Properties are usually divide into *cuartos* or quarters, which are rotated between pasture, fallow and cereal cultivation. Barley and other cereals may often be seen growing round oak trees. This multiple use of available natural resources, effectively a form of agroforestry, has allowed production to continue sustainably for centuries under adverse environmental conditions.

These agricultural systems have also helped preserve a landscape that is renowned for the variety and the abundance of its wildlife. Extremadura supports the world's largest population of several endangered species, including the black vulture, the imperial eagle, the great bustard and the Iberian lynx, and it is a vital winter refuge for more than a hundred million migratory birds from central and northern Europe.

In the past three decades, land use has begun to change. Traditional forestry, based on the multiple use of woodlands by rural communities, is being replaced with large timber plantations for logging, and local people are increasingly denied access to forest resources. In the development process, low-quality timber is replacing hardwoods, and small family woodcraft and carpentry co-operatives are losing ground to larger, more mechanized industries. The species used to reafforest (pine and eucalyptus) are not suited to climate conditions, and thousands of hectares burn every year in the summer season. Many of these fires are possibly started on purpose by country people who would rather see the timber burn in hope of gaining back their grazing land, or whose only benefits from the woodland are government wages for replanting and fire prevention schemes. What work there is goes largely to outsiders: to bulldozer companies in charge of work on forest roads and firebreaks; to engineers who plan and direct operations; to chemical companies who sell pesticides; to the companies who own the helicopters and planes used for aerial spraying and fire control, and so on.

The intensification of agriculture in the *dehesas* has gone hand in hand with Spain's industrial growth over the last 30 years. As high-quality farm products from *dehesas* have lost their markets in favour of cheaper industrial foodstuffs, and as people have drifted to the cities in search of higher wages, thousands of hectares of Mediterranean woodland have been uprooted, and substituted by large irrigation schemes promoted by the government. Now, with encouragement from the EC, agricultural and forestry regional policies are totally geared towards industrialization. The administration claims that the "modernization" process is needed in order to reach "development" levels of other "more advanced" European regions, and to promote job creation in the region. Investment is therefore directed at infrastructure works that have little to do with local community needs, and which cause severe environmental damage and loss of local resources and opportunities.

Peseta Pie

In Extremadura, the Regional Development Programme is not an "integrated" plan but a set of sectoral programmes. The Operational Programme for the Improvement of Farming⁶ sets out as its objectives the intensification and mechanization of farming, in order to create jobs in rural areas. None of the budget areas provide support for traditional extensive farming, nor for conservation of local breeds or traditional farming practices. Investment is allocated as follows:

Agricultural Road Infrastructure 2,813 million pesetas

Two-thirds of this is allocated for the provision of new roads. Given traditional extensive uses of land, there is already an adequate farm-road network, and new roads will damage the landscape and countryside without bringing any great benefits. Road plans are usually drawn up in administrative offices by technical engineers who are unfamiliar with the site and unaware of local needs. Much of the investment will go into roads that take no-one anywhere. The 840 million pesetas allocated for improvement of existing farm-roads may be justified, but there is concern that roads may be upgraded to a level far beyond the needs of local communities, and in the process cause more environmental damage.

Improvement of Irrigation 3,015 million pesetas

Existing irrigation networks are in need of repair in order to save water and improve efficiency. Yet more than half of the irrigation budget is allocated for extending the irrigation system. In some cases this means resurrecting projects that were conceived in the days before EC Structural Funds were available and subsequently rejected as unprofitable. Under present surplus market conditions, even farmers in existing irrigation areas are being pushed into bankruptcy and the regional government is already subsidiz-



... The modern approach, however, involves the construction of dams up to 15 metres in height and the ruthless canalization of watercourses. Rivers and streams, like that shown above, are literally bulldozed into shape in a tragically misguided attempt to stop erosion.

ing energy (needed to pump water) in order to keep farmers on the land. Extension of irrigation schemes into remaining dehesa areas, where soils are poor and unsuitable for irrigation, is environmental and economic madness. The regional government was asked to reconsider one scheme in the Guadiana valley, which threatened to "improve" land designated a priority area in an EC-financed conservation project. The plan has not been withdrawn, although some hectares have been excluded from the scheme. Unfortunately, where it is impossible to demonstrate a direct threat to a rare species of bird or animal, projects are almost impossible to stop.

Land Amalgamation Schemes 412 million pesetas

The dispersal of tiny plots can cause problems for small farmers, especially in irrigated areas. But previous schemes to regroup holdings into larger units have often been carried out in an insensitive and environmentally destructive manner. There is a real fear that if the process of land amalgamation is accelerated, natural features (brooks, uncultivated marginal areas, border vegetation and stone walls) will disappear with a tragic effect on the environment, rural life and economy. The disappearance of features that are important to country life, such as wild herbs and game species, could have a very negative effect on the economic and recreational opportunities for local communities.

The intensification of farming already taking place in the region means that aerial pesticide spraying, subsidized by the regional administration, is now normal practice, both for farmland and in wooded areas. The devastating effect on insect populations (including very rare and endangered species) has had a knockon effect for bird and amphibian populations which depend on insect life as a source of nourishment. The area is consequently becoming less desirable as a habitat for both fauna and humans.

The Programme for the Protection of the Environment and the Conservation of Natural Resources in Extremadura⁷ is no less technocratic, with investment allocated as follows:

Forestry/Reafforestation 900 million pesetas

This implies clearing existing maquis vegetation - shrubs and small treesfrom slopes with heavy machinery, in order to plant evenly-spaced trees, many of which are likely to die soon after planting. This is going ahead despite the fact that maquis is extremely valuable as a defence against erosion and a means of retaining water, and provides a habitat for wild animals such as the lynx, imperial eagle and black vulture. Large areas have been "cleared" for reafforestation, exposing fragile mountain soils to erosion by rain and wind. More than 30 tonnes of soil per hectare are washed away every year causing severe sedimentation of watercourses.8 The alternative of planting by hand, without clearing the maquis, which could be very positive in areas where the forest has degenerated due to forest fires or over-exploitation, is approved by the administration in theory, but not implemented.

Improvement and Conservation 910 million pesetas

This programme, in common with most modern forest protection measures, fails to tackle the root of the problem: the divorce between forestry and the local population's economy. Under traditional forest management it is not necessary to clear the undergrowth as a fire prevention measure; grazing, fuelwood gathering, fruit picking, coppicing and other pursuits take care of that. But when these activities cease, forests soon become tangled thickets of dry tinder. Modern forest management requires massive finance for fire prevention measures, fire-fighting machinery and the reafforestation of burnt areas. Under the development plan, "cleaning" of forests is undertaken by contractors with heavy machinery, and provides little employment for local people. Instead of open communal grazing areas alternating with woodlands to form natural firebreaks, the forestry administration favours the opening-up of fifteenmetre-wide firebreak strips in a checkerboard pattern, in spite of the evidence of their uselessness in case of fire, and their contribution to erosion.

Forest Roads 144 million pesetas

Modern forestry practices, which involve the use of heavy machinery, are used to justify the extension and improvement of the road network. In mountain areas with steep slopes the opening up of new roads (up to 30 metres wide) inevitably leads to an increase in erosion. Road building and associated forestry practices have obstructed or destroyed the natural water drainage, causing an increase in the incidence of "natural disasters" (floods) in recent years. Furthermore, the risk of forest fire increases with the provision of easy access for vehicles to remote areas of forest, as does the problem of poaching and harassment of wild animals and freeranging domestic livestock. Nevertheless, forest road work is accorded very high financing by the EC under community forestry support.

Erosion Control 360 million pesetas

Traditional management which retained the vegetation cover and did not expose soils to unnecessary damage represented a good way of controlling erosion. Under the development plan, money is provided for river canalization, dams, terracing and improvement of vegetation cover. All these projects involve big machinery and

"high tech" solutions which are both unnecessary and inappropriate. Canalization of the rivers degrades water quality, destroys important wildlife habitats and downgrades the visual beauty of the area, while contributing to, rather than preventing, erosion. The two-metre-high artisanal dams which already exist provide a much better way of channelling and using water than their proposed new counterparts; these are up to 15 metres in height and severely disrupt the flow of the river, flooding good land upstream and drying out the river downstream. Traditional stone wall terracing on mountain-sides makes good use of natural resources; but constructing terraces with bulldozers - turning over soils and destroying soil profiles, removing all vegetative cover, and levelling out large areas -leads to the erosion of soil which had taken hundreds of years to build up.

A Global Process

In their drive to redress the disparities between regions, the EC planners are effectively eliminating the differences between them. Remote and sensitive environments such as Extremadura, as they become integrated into the wider economy, will increasingly come to resemble the engineered landscape of the modern European heartland. Planners, schooled only in straight-line solutions, see no alternative other than to stamp upon complex patterns of rural habitat, the rectilinear grid of industrial agribusiness: motorway systems, highspeed rail links, strings of pylons, canalized rivers, checkerboard forests and square fenced fields. In such a regime there will be scant opportunity for the small independent farmer. The few who flourish will emerge as large-scale agribusinesses, pursuing the prescribed monoculture, dependent upon a battery of chemicals and employing highly mechanized contractors.

This scenario is by no means unique to Spain, or even to Europe, but must be seen as part of a process of globalization. Structural Funds in Europe serve much the same purpose as the development aid dispensed to the Third World by agencies such as the World Bank and the European Development Fund. In both cases the regional inequalities which the aid is supposed to redress have been exacerbated by the introduction of intensive export-orientated agricultural systems, which transform cultural diversity into economic disparity. The impoverishment of small farmers, the expropriation of lands and forests, the collapse of distribution networks for local products, and the consequent emigration to the cities are evident in the recent history of Spain, just as they are in Brazil, Nigeria or the Philippines. And in both cases aid is invoked, not to provide support to those threatened cultures, but to administer the *coup de grâce* — to replace the reciprocal relationship between humanity and nature with a blind economic totality.

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The logic of poverty, rooted in a system of international debt, has propelled families into colonizing the Amazon rainforest. It is unlikely that debt-for-nature swaps will offer poor people a viable alternative.

Debt-for-Nature Swaps Who Really Benefits?

by

Rhona Mahony

Debt-for-nature swaps do not deliver the benefits their advocates promise. They do not relieve the debt burdens of poor countries nor do they protect the wild lands set aside in national parks as part of the deals. Instead they benefit mainly the European and US banks who are selling the debt at discount prices.

Environmentalists thought they had found a new ally in the 1980s - Wall Street. In 1984, a vice-president of the US World Wildlife Fund, Thomas Lovejoy, suggested that northern environmentalists enter the financial markets, buy up some of the loans which developing countries owed to US or European banks and which the banks were offering for sale at discounted prices, and then cancel these foreign debt obligations in return for good behaviour by these countries.1 Good behaviour would include making payments in local currency, equal to the dollar face value of the debt or a little less, to a local environmental non-governmental organization (NGO).

Scores of environmentalists took up the suggestion. The deals they struck were called debt-for-nature swaps and seemed an excellent idea. By mid-1991, 19 debt-for-nature swaps had been completed in ten countries (see Table 1, p.98). For paying out a small sum in US dollars, environmentalists received a large

amount of local currency in return. But, despite superficial appearances, they did not get something for nothing.

The conservation funds generated by the swaps in Costa Rica, the Philippines, Ecuador, and Madagascar account for 95 per cent of the total funds generated. They will be used mainly to administer national parks, to buy land to expand the parks, to train park personnel, to research habitats and species, and to carry out environmental education. The environmentalists have worked hard and creatively to arrange these swaps.

From the beginning, however, the effort put into debt-fornature swaps by environmentalists has been flawed by two miscalculations. The first was their belief that buying and cancelling small amounts of debt would help the indebted countries; the second was that simply drawing park boundaries on a map could protect sensitive ecosystems from invaders propelled into them by powerful economic forces, defended by private armies and bribery and hidden by thousands of hectares of wilderness. Parks supposedly gaining from swaps in all four major beneficiary countries are being invaded by loggers, miners or the landless.

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Table 1 Debt-for-Nature Swaps 1987-1991

у	Purchaser	Cost to Purchaser (\$)	Face value of debt (\$)	generated (\$ equivalent of local currency)
		100.000	050.000	050.000
	CI	100,000	650,000	250,000
	WWF	354,000	1,000,000	1,000,000
4	The Netherlands	5,000,000	33,000,000	9,900,000
1	FPN/WWF	918,000	5,400,000	4,050,000
1	Sweden	3,500,000	24,500,000	17,100,000
1	NC	784,000	5,600,000	1,680,000
	WWF/NC/MBG	1,068,750	9,000,000	9,000,000
ar	WWF/USAID	950,000	2,111,112	2,111,112
3	WWF	200,000	390,000	390,000
	WWF	470,000	2,270,000	2,270,000
a	Sweden/WWF/NC	1,953,473	10,753,631	9,602,904
Republic	CTPR/NC	116,400	582,000	582,000
ar	WWF	445,891	919,363	919,363
	WWF	11,500	50,000	50,000
a	Rainforest Alliance	360,000	600,000	540,000
74	MCL/NC ^b			(CABEI debt)
ar	CI	59,000	119,000	119,000
	CI	180,000	250,000	250,000
	CI	0°	250,000	250,000
	DDC/CI/SI	250,000	1,000,000	1,000,000
age	16,705,000	98,445,000	61,064,000	
ai	ge onal d	MCL/NC ^b CI CI CI DDC/CI/SI ge 16,705,000 onal d	MCL/NC ^b CI 59,000 CI 180,000 CI 0 ^c DDC/CI/SI 250,000 ge 16,705,000 98,445,000 onal d	MCL/NC ^b CI 59,000 119,000 CI 180,000 250,000 CI 0 ^c 250,000 DDC/CI/SI 250,000 1,000,000 ge 16,705,000 98,445,000 61,064,000 onal d

NC — Nature Conservancy

MBG — Missouri Botanical Gardens

USAID - United States Agency for International Development

CTPR — Conservation Trust of Puerto Rico

MCL — Monteverde Conservation League

CABEI — Central American Bank for Economic Integration

DDC — Debt for Development Coalition

SI — Smithsonian Institute

^aConservation funds generated do not include interest on bonds when government pays in bonds rather than cash. ^bDebt donated by the Bank of America

"WWF contributed \$1.5 million to this deal on top of the swap

Sources: World Wildlife Fund, The Nature Conservancy and World Bank data, World Debt Tables 1991-1992, Vol. 1. Analysis and Summary The World Bank, Washington, DC. 1991

Third World Debt

Those Third World governments which borrowed heavily during the 1970s from foreign commercial banks, foreign governments, and multilateral institutions, such as the World Bank and the International Monetary Fund, now owe sums of money so staggering that they will never be able to repay them.

In 1990, the developing countries' long-term debt totalled \$1.05 trillion of which \$293 billion was owed to commercial banks. Developing countries can try to earn dollars to repay these foreign loans by exporting more goods and services than they import. In 1990, however, the developing countries ran a trade deficit of over \$28 billion which was projected to rise to \$38 billion in 1991.²

This disturbing state of affairs is reflected in the low prices the commercial banks have been willing to accept when they sell Third World debt obligations on the secondary, or resale, market. The secondary market began in 1982 after Mexico announced in the same year that it could not make its scheduled loan repayments. Other highly indebted countries, including Argentina, Brazil, Nigeria, the Philippines, Costa Rica and Peru soon made the same announcement.

Faced with non-payment of their loans and therefore keen to reduce their risk by diversifying their portfolios, some US and European banks began selling individual loans at a discount. They calculated the discount by estimating a country's ability to repay in the future, considering aspects such as a country's foreign exchange reserves and its expected net income from foreign trade. Other banks and some private investors, who had made slightly differing assessments of the likelihood that debtor countries would repay, bought up these loans.

By 1989, the total annual volume of debt traded was over \$20 billion.³ The discount on these Third World loans has varied from country to country and over time. Sample secondary market prices, in cents per dollar of face value, in early 1991 were: Colombia 67 cents, Philippines 47 cents, Morocco 46.75 cents, Brazil 26.625 cents, Ecuador 26 cents, Zaire 16.5 cents, Panama 14.25 cents, Ivory Coast 6 cents, Peru 5.5 cents.⁴

Most countries participating in debt-for-nature swaps are heavily indebted (see Table 2).

Who Benefits?

Who actually benefits from the purchase of a country's debt? Suppose your best friend has \$100,000 in assets, but owes \$2 million. You consider going to the lenders and buying back some of the debt so as to cancel it, in effect paying off some of your friend's debt — or so you think. They would sell it to you for five cents on the dollar, a rate calculated on how much your friend, or rather your friend's assets, are worth. If your friend cannot pay the debt, the most the lenders can hope to get back is the assets, their only security. Thus \$100,000 assets divided by \$2 million debt equals a discount price of five cents. For only \$50,000, you could relieve your best friend of half — \$1 million — the burdensome debt (\$1 million multiplied by five cents equals \$50,000). Should you do it?

The answer is no. If you repurchased half the debt, your friend

would still have assets of \$100,000, but now owe \$1 million. The price of the debt, however, on the resale market, would probably go up to ten cents on the dollar (\$100,000 assets divided by \$1 million equals ten cents). The lenders would still expect your friend to repay the same amount as before (\$1 million debt now multiplied by ten cents is the same as \$2 million debt before multiplied by five cents). Your friend would be no better off than before the repurchase. But you would have given \$50,000 to some of the lenders, and also increased the value of the debt held by those lenders who did not sell; their IOUs would have doubled in value.

Although this is a simplified example, these price changes do happen in real life. Bolivia repurchased some of its own debt in March 1988. Donors said they would give Bolivia the money to buy back about 46 per cent of its debt and cancel it; they did not ask for anything in return, so this deal was not a debt-for-nature swap.

Before the buy-back, Bolivia's commercial bank debt had a face value of \$670 million. Its secondary market price was six cents on the dollar which meant that banks expected Bolivia to repay \$40.2 million (\$670 million multiplied by six cents). "Swap advocates have spent \$16.7 million so far to buy debt. That money went directly to such needy institutions as Bank of America, Citibank, National Westminster Bank plc, Dresdner Bank, Banque de L'Union Européene, Crédit Commercial de France, Salomon Brothers, Lazard Frères and Shearson Lehman."

After the buy-back, Bolivia had only \$362 million of commercial bank debt outstanding. The secondary market price, however, had gone up to 11 cents which meant that after the swap, banks expected Bolivia to repay \$39.8 million (\$362 million multiplied by 11 cents).

The benefit to Bolivia from the buy-back can be considered as a reduction in the amount the banks *expected* it to repay — 0.4 million. The keenest, most self-interested observers of the situation still expected Bolivia to pay back roughly the same amount as before the debt purchase.

Bolivia, therefore, got very little for its troubles, or for its donors' troubles. In fact, it did not cost the donors some \$18.5 million as it would have done when the deal was first mooted (46 per cent of the total debt of \$670 million multiplied by its discount price of six cents). Instead it cost them \$33.9 million, because news of the impending buy-back had driven the price of the debt on the secondary market up to 11 cents *even before* the purchase.⁵

It was the commercial banks which really received the benefit. Those that sold the debt earned 11 cents on the dollar for some-

Table 2 Foreign Debt of Countries with Completed Debt-for-Nature Swaps (in millions of US \$)

Country	Total Sovereign Debt*	Sovereign Debt Owed to Commercial	GNP	Per Capita GNP (US\$)
Bolivia	3,605	395	4,226	620
Costa Rica	3,480	1,415	4,899	1,780
Dominican Republic	3,281	739	6,422	790
Ecuador	9,421	4,847	10,018	1,020
Madagascar	3,345	150	2,340	230
Philippines	22,992	8,790	43,961	700
Poland	34,747	9,268	63,453	1,760
Zambia	4,095	70	4,983	390

Sovereign debt consists of public and publicly guaranteed long-term debt.

Sources: Debt and GNP data from World Debt Tables, External Debt of Developing Countries, 1990-91 Vol. 2, Country Tables World Bank, Washington DC, 1990. Per capita GNP from World Bank, Social Indicators of Development 1990 John Hopkins University Press, Baltimore and London, 1991. thing that, until the buy-back, had been worth only six cents, giving them \$33.9 million. Those that did not sell suddenly found that the debt they owned had almost doubled in value.⁶

The system works the same way when environmentalists buy back debt. Swap advocates have spent \$16.7 million so far to buy debt (*see* Table 1, p.98).⁷ That money went directly to such needy institutions as Bank of America, Citibank, National Westminster Bank plc, Dresdner Bank, Banque de L'Union Européene, Crédit Commercial de France, Salomon Brothers, Lazard Frères and Shearson Lehman. Moreover, for the banks that did not sell, the value of the debt they held went up in value.⁸

Misplaced enthusiasm

Even if advocates of debt-for-nature swaps realize that the swaps are not a panacea for a country's debt crisis, many of them are still enthusiastic about the conversions because they believe that the discount at which the Third World debt is sold helps multiply the donations. They are confident that they enable the donor to leverage quantities of funds for rainforest conservation at a higher exchange rate than would normally be available, as long as inflation does not whittle away the advantage gained.

Costa Rica carried out a typical swap in February 1988. A Costa Rican NGO, Fundación de Parques Nacionales (FPN), used \$215,692, donated by the US World Wildlife Fund (WWF), to buy official Costa Rican debt with a face value of \$1.3 million. FPN then cancelled the debt in return for the Costa Rican Central Bank making donations in *colones* — the local currency — equivalent



to \$978,000 to the Guanacaste and Corcovado National Parks and the Monteverde Conservation League.

WWF paid \$215,692 to buy debt for which the Costa Rican government paid the equivalent of \$978,000 in local currency to have cancelled. Thus WWF's contribution resulted in a donation from the government to local environmental groups which was 4.5 times larger, a result that swap advocates enthusiastically call the multiplier effect. But there is nothing magic about it.

The Central Bank's donation to the park authorities and the Monteverde Conservation League was in the form of five-year bonds, denominated in *colones*.⁹ These groups will have to wait five years before they can get the funds — assuming the government redeems them. There is no guarantee that Costa Rica will honour these bonds in five years time any more than it will pay back the rest of its debt. Remember, there is a reason for that secondary market discount in the first place — the Costa Rican government cannot pay its debts. But even if the government did honour this new debt, it could cut its other environmental spending to make up the cost.

What happened in this Costa Rican example, and in most of the other 18 debt-for-nature swaps worldwide, is that a First World environmental group has given money to First World commercial banks while a Third World country has promised to give money to its environmental groups. No transfer has taken place from North to South.

Unprotected parks

How do environmentalists spend the money they pry out of Third World governments? They mostly create, enlarge or administer national parks. Unfortunately, calling an expanse of natural, and possibly threatened, habitat a park by drawing a line around it on a map and issuing uniforms to a few rangers gives it no more protection than it had before. Natural areas will not be safe until governments stop subsidizing the destructive activities of humans, stop theft and violence by the well-off, and fulfil the basic needs of the poor.

Ecuador

The government in Ecuador contributed the equivalent in the local currency, *sucres*, of \$10 million, in the form of bonds to an NGO, Fundación Natura. This organization will spend all the money to maintain national parks, mark boundaries, draw up management plans and carry out environmental education. The parks include the Galapagos Islands; over one million hectares on the western and eastern slopes of the Andes (Cayambe-Coca Ecological Reserve, Cotacachi-Cayapas Ecological Reserve, Sangay National Park and Podocarpus National Park); and one million hectares in the Amazon (Cuyabeno Wildlife Reserve and Yasuni National Park). They also include Machalilla National Park, a 40,000 hectare site on the northwestern coast.¹⁰

The rangers will face a formidable job in all these places. Poachers and illegal loggers have invaded the Andean Podocarpus park. Foreign oil companies and landless farmers from western Ecuador, many of whom are part-time oil-company employees, are active in both the Amazonian parks. On the Andean slopes, large-scale plantation operators have invaded Cotacachi-Cayapas, while landless farmers threaten Cayambe-Coca and Sangay. Local people's tree-cutting for fuel and over-grazing of goats and cattle may soon desertify parts of northwestern Machalilla.¹¹ Many of the people of Ecuador have no other option but to survive in this way. With a per capita GNP of \$1,020, Ecuador has a population of 10 million which grows at a rate of 2.8 per cent a year; 38 per cent of children under five are malnourished.¹² The government depends heavily on its revenues from petroleum, all of which comes from — and is expected to come from — reserves in the Amazon. The roads built by the petroleum industry, which has not been subject to environmental regulation, are the main way that poor colonists enter the rainforest.¹³

Land tenure laws cause environmental destruction as well. Most of the Amazonian region has been declared "unoccupied", even though indigenous people live there. To receive a title to land, a person must clear the forest, replacing it with crops or pasture. The government gives preferential credit to cattle ranching, even though it is not sustainable on the poor soils of the Amazon.¹⁴ Indigenous people cannot obtain land titles by carrying out shifting agriculture, which is sustainable. When their land rights are granted to them, however, they get no help in enforcing their boundaries against outsiders.¹⁵

To overcome environmental destruction, the government should help farmers in the coastal areas and mountains produce more for their own consumption and for local sale, or to find city jobs, which at present are too few and pay barely enough for a family to live on, so that they will not be forced to migrate to the Amazon. More spending on education, especially for women, would help as well.¹⁶

The Philippines

The swap story in the Philippines is similar. The Filipino government contributed a sum in *pesos* equivalent to \$1.29 million to its Department of Environment and Natural Resources and to the Haribon Foundation, an environmental NGO. They will administer national parks, train conservation specialists and research habitats and species. The parks include two on the remote island of Palawan: St. Paul Subterranean River Park and El Nido National Marine Park; also Mount Pulog in northern Luzon and Mount Isurog in southern Luzon.¹⁷

Filipino park personnel will face competition and possible violence from illegal loggers who are responsible for up to half of the country's total log production.¹⁸ In the recent past, they have cut in St. Paul National Park and are probably cutting at present in other parks, operating with the protection of private armies and the Filipino military.¹⁹

The magnificent reefs of El Nido National Marine Park are threatened because they are being damaged by siltation caused by logging and agricultural activities. By using dynamite and cyanide, fishermen have damaged many reefs, although better enforcement of park rules by officials has curtailed such practices.²⁰ Landless farmers are believed to have encroached on most of the other parks.²¹

The Filipino population of 61 million has an annual growth rate of 2.3 per cent and a per capita income of \$700.²² Many special privileges benefit the wealthy, whose monopolies, oligopolies and feudal estates dominate the economy. Powerful landowners oppose land reform. Uncertain land ownership discourages investment in agriculture by peasants, large estate owners and commercial agribusiness alike.²³ Millions of poor Filipinos are held captive by inequity, lawlessness and widespread abuse of power.

The United States government, through USAID, plans to give

Madagascar

The Madagascar debt-for-nature swap was the first African one and the first deal in which USAID paid substantial sums to commercial banks. The Malagasy government donated the equivalent in local currency of just over \$3 million which WWF(US) will use to work with the Malagasy Department of Water and Forests. They will train 400 park guards, make satellite

"The only beneficiaries of debt-fornature swaps at present are the Northern banks."

and aerial surveys of the country, create new parks, and carry out environmental education. They hope to support rural development programmes as well. The parks which will benefit have been called Integral Natural Reserves: Marojejy, Andringitra, Zahamena, Lokobe and Bemaraha; the Manongarivo Special Reserve will also benefit.²⁴

WWF activities will concentrate on the Marojejy and Andringitra reserves. Marojejy contains over 60,000 hectares of mountainous terrain and rainforest on the northern tip of the island and is rich in creatures found nowhere else in the world, including six lemur species. Its steep slopes form a crucial watershed for northern villages and farms, but the areas to the south and west are deforested right up to the park boundary. The condition of the northern and eastern boundaries of the park is uncertain and landless farmers have encroached on the reserve itself.

The Andringitra reserve includes 31,000 hectares of highland rainforest and savanna. Like Marojejy, its mountains are a key watershed for villages and rice farmers below. The park's rangers will have to be firefighters as well because shepherds and arsonists tend to start fires in nearby grasslands which often spread, by accident or design, into the park.²⁵

The vast majority of Malagasy citizens, however, despoil their national parks because they are among the poorest people in the world and see no other choice or way to survive. Madagascar's population is 11 million; its population growth rate is 2.9 per cent; 52 per cent of children under five are malnourished.²⁶ Acute poverty discourages people in Madagascar from taking the long view and managing their land sustainably. The country's insecure and ambiguous land tenure makes the problem worse.

Costa Rica

The Costa Rican wildlife parks cover over 11 per cent of the country's land area and have become international tourist attractions.²⁷ The swap programme in Costa Rica has been the largest of any country so far in terms of number of swaps, face value of the

Debt Swaps: A Southern View

In September 1991, the Brazilian Institute for Economic and Social Analysis (IBASE) held a seminar on debt conversion as part of the Forum on Debt and Development (FONDAD). The seminar was attended by environmental and social activists from Latin America, Europe and the US. Below are some of the major conclusions reached:

- The mechanism which exchanges foreign debt for environmental benefits does not contribute to the development of environmental policies which are consistent with democratic management of natural resources, and which might lead to environmental conservation and a better quality of life for the local population. Instead, it forms part of a general strategy for reaffirming the creditors' political and economic domination over the debtors, within a development model which commercializes life in all its aspects.
- Debt-for-nature swaps stipulate that the debtor countries allocate resources in local currency which is extremely scarce because of internal budgetary crises - to be applied in isolated conservation projects which are defined with little or no popular participation. Without taking into account the sovereignty of the local population or the social conditions of these countries, the projects are designed more for research and exploitiation of natural resources than for actual conservation.
- Debt-for-nature swaps do not represent the entrance of new money into a country, but provide an illusory relief of external debts, releasing a sum which is insignificant both in terms of reducing the debt and of dealing with the environmental crisis.
- Debt-for-nature swaps allow devalued foreign debt bonds to be transformed into internal debt bonds, reducing the creditors' losses and penalizing the local population, because of the budgetary pressure on the government.

- Debt-for-nature swaps create an arbitrary form for allocating resources. While the mobilization of resources for the environment is essential, it should be based on local priorities and social needs.
- Debt-for-nature swaps do not consider the sovereignty of the country involved in deciding which projects should be financed. They raise the question of the democratic management of these projects, since the groups and interests involved (creditors, governments, environmental agencies) make local participation difficult.



Debt-for nature swaps have been negotiated over the heads of local people who find their homelands put out of bounds against their will.

 Debt-for-nature swaps legitimize the debt at a time when many indebted countries are putting forward the idea that the debts were incurred illegally and thus weaken their campaign. The unconstitutionality of the debt has been raised by legal authorities in Brazil, the Philippines and internationally. Their standpoint is that it has already been paid, and that the financial mechanisms which are used to increase it artificially are part of an illegal strategy by the creditors which constitutes a crime punishable by law.

- Debt-for-nature swaps are part of the strategy for merchandizing and private apprpriation of resources, previously regarded as a common heritage. Biodiversity itself is at risk as it becomes increasingly an object of interest to science and industry. The mapping of gene banks may be one of the objectives hidden behind the good intentions of the conservation and research projects allotted to debt conversion.
- Debt-for-nature swaps divert attention from the main arena of conflict where the exisiting model of wealth accumulation and international relations favours the extraction and transference of a significant part of the labour, natural resources and wealth of Third World countries to the dominant points of the capitalist economy.
- Denying the appropriateness of debt conversion as a means to preserve nature does not mean ignoring environmental degradation. On the contrary, it is to recognize the mechanism's ineffectiveness in addresssing the gravity of the socioecological crisis we are facing. More than anything, it highlights the need to seek alternatives which will permit the implementation of a democratic development model.
- Sadly, it is not ignorance of the weaknesses of debt-fornature swaps that has led NGOs to become involved in debt conversion schemes, believing they will obtain financial resources or influence official environmental policies. Rather their involvement would seem to indicate a movement increasingly co-opted by the financial ethic.

The full text of the IBASE statement is available from The Ecologist.

debts, the amount paid for them and the conservation funds generated. As part of swap agreements, the government has contributed the equivalent in colones of roughly \$42.9 million to environmental projects. But in spite of its reputation as a pioneer in trying to protect national parks, Costa Rica has problems too.

Much of the government's donation will be spent on buying land from private owners and administering parks. Guanacaste National Park, which used to be a tropical dry forest, has been badly degraded by cattle ranching and is still threatened by treecutting. Gold miners started working in the Corcovado National Park, part of the Osa Peninsula on the Pacific coast, about ten years ago, many of who now refuse to leave. Monteverde Cloud Forest in the northwest is beset by illegal loggers. Landless farmers are encroaching on many other parks and reserves.28

Reforms

Many environmentalists who have arranged these debt-for-nature swaps know that creating a park is not enough. Some have tried to incorporate social development assistance and reform into their projects. In Madagascar, WWF will help train 300 villagers to teach contour farming, strip composting, and other techniques to improve farmers' productivity, protecting the local environment in the process. They are considering demonstrating simple, more fuel-efficient cooking stoves, so women would not need to search for, carry or use so much wood.29 In Costa Rica, WWF and the Nature Conservancy support environmental lawyers working to issue titles to land on the Osa Peninsula where only ten per cent of the land is held under secure title.30

In another project on the Osa Peninsula, WWF and the Nature Conservancy have come up with an idea called Community and Family Rainforests. Landless farming families living in the forest will be issued land titles and receive a lump-sum payment and annual salary thereafter to become caretakers and guardians of the forest under an agreement to fulfil certain duties. Violators will lose title and possession of the land. The success of such schemes remains to be seen.31

To protect sensitive ecosystems in the Third World and the indigenous people who rely on them, the underlying forces causing their destruction, which include extreme poverty, government subsidies for forest clearing and insecure land tenure, need to be addressed. Development, environment and economics need to be perceived as indivisible.

Within a wide-reaching framework which attempted to tackle economic, demographic, political and environmental issues with equal force, debt-for-nature swaps could perhaps play a minor role. But in their current form, despite some good intentions, they are not the mechanism to address or affect any of these problems which have invariably led to the resource degradation in the first place. The only beneficiaries of debt-for-nature swaps at present are the Northern banks.

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international groups involved in campaigning for the Amazon rainforest. It contains overviews of the various issues at play in the Amazon, plus many maps and photographs.

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Course and effect Golf tourism in Thailand

by

Anita Pleumarom

A worldwide craze to build golf courses is adding to the negative social, cultural and environmental impacts of mass commercial tourism, particularly in developing countries. Forests are cut down; water resources depleted; and air, water and soil polluted by the excessive use of chemicals. Local people are deprived of their rights to the resources which they depend on for survival as their communities are disrupted and destroyed.

First played by King James of Scotland and his courtiers in the late 15th century, the game of golf remained largely a preserve of the British wealthier classes until it crossed the seas with Scottish 19th century traders. They laid out golf courses in Calcutta in 1829, the first outside Britain, and Bombay in 1842. The game had reached the United States and South Africa by 1885 when a course was built in Cape Town; the Royal Harare in Zimbabwe

was founded in 1899. By the turn of the century, golf courses had sprouted wherever the British flag had been raised, and golf gradually became popular among the affluent classes throughout the world.

Over the last decade, the game has entered a new phase. There has been such an explosion of interest in golf that it is now possibly the world's fastest growing sport. The number of active golf players is estimated today at 50 million, and golf course development has become the fastest growing property sector in the world. In the last ten years, the number of golf courses in Europe has increased by 74 per cent and the number of golfers by 231 per cent.¹On average, one and a half new courses open every day in the United States. It is above all corporate involvement in the leisure industry which is driving this expansion. As many important business and political decisions are now discussed on the fairways and greens, golf club memberships are regarded by many in influential or aspiring positions as essential.²

In Asia, golf has become a new symbol of status and affluence. Enthusiasm for the game is growing fast among the region's burgeoning class of *nouveaux riches*, particularly in the industrializing nations of Thailand, Malaysia, Indonesia and the Philippines, but it is in Japan where golf fever has by far exceeded the

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trend in other industrialized countries.³ The country has more than 1,700 golf courses and is expected to have 2,000 within a few years. An average ten per cent increase each year in the number of Japanese golfers since the golf boom started in the mid-1980s has brought the total number of players to over 20 million. Even ordinary working men and women have taken out loans to buy golf club memberships.⁴

But golfing in Japan is

expensive; membership of a golf club can be as high as \$500,000 with additional green fees and caddy hire to pay. The courses are so overcrowded, each course having to accommodate an average of 10,000 players, that reservations to play a round have to be made many months ahead. With the rise of the yen in 1985 and government support for tourism, Japanese golfers began to find it cheaper and more convenient to fly to southeast Asia for a game than to play at home.⁵ For the price of six rounds of golf in Japan, a golfer could play for three days in three different foreign golf courses and enjoy the additional sights, sounds and pleasures of an "exotic" land.⁶

Entrepreneurs in Thailand, eager to lure these affluent golfplaying visitors, became the driving force behind the frenzied construction of golf resorts in the country from 1987 onwards, and Thailand quickly became one of the main golfing destinations for the Japanese.⁷ Nearly half a million golfers, one-fifth of whom are expatriates and foreign tourists, now take regularly to Thailand's 80 golf courses. By the end of 1992, 120 courses should be in operation, 160 by the end of 1993.

Golf tourism in Thailand today is no longer targeted solely at the Japanese. Travel agencies, hotel chains, airlines and other tourism multinationals are increasingly selling the country as a cheap golfing destination,⁸ so that it looks set to become the centre of Asian golf tourism over the next five years.⁹ The golf course and tourism lobby claims that Thailand needs at least 300 courses to cope with the expected demand.

Land Acquisition

Golf requires large stretches of land, not only for the courses, which are laid out to replicate the picturesque green downs and woodlands of the game's temperate origins, but also for the associated resort developments which are the real profit makers today. Many of the new and proposed golf complexes in Thailand, built in the style of country clubs, include not only golf courses but also luxury hotels, condominiums, second homes, retirement villages, other sporting and recreational facilities, shopping and conference centres, and restaurants.¹⁰ Thus whereas a golf course in Europe takes up about 64 hectares, a project in Thailand covers a much larger area, on average 160-320 hectares.¹¹

The development of Thailand's most spectacular golf course and recreation resort, the Kaeng Krachan Country Club in Phetchaburi province, started in February 1991. Covering 5,600 hectares of land, the \$400 million project compromises three championship golf courses; 700 residential plots; a five-star deluxe hotel; a department store; an amusement park; a sports complex with a standard class swimming pool, two football fields, 30 tennis courts and 30 badminton courts; a horse-riding field; a car racing track; an airport with a two-kilometre runway; a Buddhist meditation centre, a wildlife sanctuary; and school and health facilities.¹²

Satellite towns linked to golf courses are springing up around urban centres and industrial zones, particularly on the eastern coast near the capital, Bangkok. Further afield, major tourist spots are targeted. The construction of golf and country clubs in the provinces — near the Khao Yai National Park in the northeast, in Kanchanaburi in the west, Chiang Mai and Chiang Rai in the mountainous north, and in the southern seaside areas of Phetchaburi, Hua Hin and Phuket — is in line with government policies of boosting golf tourism and attracting investors away from the saturated capital.¹³ Developers tend to favour scenic locations for these exclusive golf resorts, such as near beaches and forests, and on river banks and hills, areas which often have a high ecological value.

Acquisition of land for golf and tourist resorts is just one of the causes of land speculation in Thailand in the past few years. The beneficiaries of the country's rapid economic expansion over the last three decades, together with foreign investors, have used their increasing amounts of disposable income to buy up land held by the growing numbers of rural people who have lost out in this process.¹⁴

From being worth a few thousand *baht* per *rai*, land is now being exchanged for millions of *baht* per *rai*.¹⁵ The value of land transactions increased seven times between 1986 and 1990 nationwide: in the east, it went up 17-fold, in the central and northern regions, seven-fold, and in the northeast, four-fold. The number of transactions went up 250 per cent over the same period.¹⁶

Speculators tend to acquire land in regions where economic growth and a subsequent rise in land prices are expected. In the north of Thailand, for example, land is being snapped up because investors predict a favourable business atmosphere when the route to Yunnan in the south of China opens up, and because tourism and agribusiness is flourishing.¹⁷

Much of the land which changed ownership over the past six years or so was at first left idle after the transaction, an indication that speculators were accumulating it as a long-term or even a short-term investment. Land that was used after it



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Allsport/David Cannon

The local jobs created by the golfing industry caddies, greenkeepers, unskilled hotel staff and the like — are of low status, with low or uncertain pay. Workers are expected to adopt subservient attitudes and women are vulnerable to sexual exploitation.

changed hands was transformed mainly into golf courses, tourist resorts, industrial estates and prawn farms. Of the golf courses now in operation or under construction, 65-75 per cent are located on agricultural land and 13.5 - 26 per cent on "protected", economic or classified forest land.¹⁸ Yet while agriculture's share of Gross Domestic Product has fallen in recent years to 17 per cent as the country pursues its goal of becoming a newly-industrialized country, some 66 per cent of the economically-active population still depend on rural livelihoods.¹⁹ The current national development policy, however, aims to reduce the number of farmers in Thailand to a mere 17 per cent within the next five years.

Dispossession

The golf course business has therefore been a major cause of growing landlessness in Thailand among rural people. To acquire large tracts of land for golf resorts, investors usually work through *kamnans* (sub-district heads) and village heads who receive commission for their efforts in transacting land deals with villagers. A common tactic is first to scoop up the small plots of land around the periphery of the proposed site. Villagers living within the boundary created by them then have no right of entry or exit from their land and have little choice but to sell their land to the property developer for whatever price they are offered. One old woman in the north of Thailand, who refused to sell her land to golf course developers, was told: "If you don't sell voluntarily, you'll have to buy a helicopter to use every time you leave your house, because whenever you go out and pass our land, we'll sue you."²⁰

Deception is another tactic. In the village of Nong Hoy in Kanchanaburi province, local people had been farming for over 100 years without official land ownership documents. An alliance of village heads, sub-district officers and other local government officials spread a rumour that the government was about to appropriate their land without compensation. The farmers agreed to sell their land cheaply to their patrons who in turn either sold it to the golf course developer at a higher price or kept it in expectation of a sharp increase in the value of the land once the resort was completed. Villagers receive an average of 30 per cent of the real market value of their land.²¹

In such cases, farmers are in a poor bargaining position because they do not have full land title, or even any land documents at all. Indebted farmers saddled with unproductive small plots are likely to be especially tempted by buy-out offers, even when the price is still relatively low.²² In the northeastern village of Khlong Kut in Korat province, for example, most of the 590 villagers sold out in 1988 when land price began to rise (10,000-50,000 *baht* [US\$400-2,000] per *rai*) just over a year after land companies, including golf resort developers, had begun to buy up village land. They cited debt, unguaranteed prices for their crops and drought as the main reasons for selling out. Fields adjacent to roads now fetch one million *baht* (\$40,000) per *rai*. Over half the village's farmland has now been converted to other uses, excluding the land which has been bought up but is not being used.²³

Such changes in land ownership tend to widen gaps among villagers and to reduce the community's bargaining power, rendering it more dependent on external forces and making it harder for local organizations to function. Poorer villagers become waged labourers within and outside the village, or encroach upon forest areas to find land to cultivate.²⁴



A Home in the Wilderness?

In previous centuries, the British were reluctant to construct courses in areas other than the links — the coastal, grasscovered sand-dunes — on which the game was originally played. They thought that the natural conditions elsewhere were not appropriate for golf: in winter, the ground was too waterlogged, in summer, baked hard. Golf courses did gradually move inland, but players still accepted ditches, bushes and sandy hollows as natural hindrances.

Improved technologies, however, have enabled turf-sward treatment and the large-scale removal of soil to change radically the landscape of golf courses. A "scorched earth" school of golf course design has emerged whereby the land is flattened and recontoured from scratch, especially if an unchallenging course is desired. Today many golf courses all over the world leave large, permanent scars on the landscape. Hilltops have been lopped off to create courses, and huge amounts of soil shifted to create greens, fairways and artificial lakes. The construction of clubhouses, hotels, residential complexes and other facilities adjacent to golf courses contributes to further ecological damage. Golf resorts built in hilly areas, where the land's capability of absorbing water is less than in flat areas, carry especially high risks because of the threat of land erosion, landslides and floods.25 It is this type of course construction which dominates in the US, Japan and Thailand.

While a great diversity of flora and fauna inhabit natural grasslands or pastures, only a few kinds of plants grow on the fairways and greens of artificially-created golf courses in the tropics. Although the grass may look fresh and green, hardly anything else lives or grows there. Thailand's golf courses, for example, are covered mainly by Bermuda grass, which requires excessive applications of fertilizers, pesticides and other chemicals. The Navathanee golf course near Bangkok, for example, where swampy land was drained at great effort to build a viable playing surface, is one of the few golf courses in the world to use Bermuda grass from tee to green.²⁶ Golf course fairways are normally 30 to 50 metres wide, but as more inexperienced players are taking to the game, a width of 90 metres or more has become common. The roughs, the areas between the fairways, where a diversity of species could grow, often dwindle into scant rows of bushes and trees. In many cases, indigenous vegetation is replaced by unsuitable exotic species.

Promoters, however, often advertise golf courses as "natural oases" which help to preserve and enhance plant and wildlife habitats. The slogan of the Forest Hills Club adjacent to the Khao Yai National Park in the northeast of Thailand is "conservation and recreation in harmony." The Huai Phu Toey Country Club in western Kanchanaburi province is "a home in the wilderness", while "Mother Nature is on our side", declares the Blue Canyon Country Club in Phuket.

Water Consumption

Golf resorts have worsened Thailand's water shortage. The water at four major dams — Bhumiphol, Sirikit, Kaeng Krachan and Pranburi — fell to record low levels in 1991 after a prolonged drought. The volume of water that the Bhumiphol and Sirikit can release to farmland has dropped from 30 million cubic metres per day to 15 million. The daily release from Kaeng Krachan was reduced five-fold from 3.5 million cubic metres to

0.7 million, while that from the Pranburi dam fell ten-fold from 1.5 million cubic metres to 0.15 million.²⁷ One golf course, however, requires at least 3,000 cubic metres of water a day for the fairways, greens, clubhouses, hotels and swimming pools.²⁷ Along the southern coastline in the Hua Hin and Cha-am area where a flurry of seaside resorts, hotels, condominiums and golf courses has sprung up, the drying up of the Kaeng Krachan reservoir has caused severe hardships to local residents. In April 1991, Hua Hin residents had to buy water which had been transported to the area by truck from the provincial waterworks authority.

Following a government attempt to prevent golf courses from using water essential for nearby villages and farmlands, golf course operators began drawing water off illegally at night and installing pipes from irrigation canals to their own reservoirs. Others turned to underground water sources by digging their own ponds with adverse ecological consequences:²⁹

"Pumping up a large amount of underground water and wasting [it] on golf courses interferes with the water flow in the surrounding areas, drying up ponds, marshes, spring and underground waters, and causing land subsidence. [All these cause] a lack of drinking water and water for irrigation for local farmers."³⁰

Poisoning the Land

The massive amounts of fertilizers, pesticides, herbicides, fungicides and other chemicals with which golf courses are routinely treated contaminate the water and the surrounding soil and air. Thai environmentalists have been alerted to the heavy use of pesticides and other toxic substances on golf courses in Japan and Europe and their impact on people's health and environment. The quantity of pesticides used on the greens and fairways of Japanese golf courses is 8.5 times more than that used in the rice paddies, two tonnes of pesticide being applied to each golf course annually. An estimated 33.5 per cent of the total amount of pesticides used on golf courses is dispersed into the air, while 13.5 per cent lingers on the trees and plants and 53 per cent in the soil. Thus not only the greenkeepers, but also golf players and caddies breathe air which is heavily polluted.³¹

Besides pesticides, large amounts of other chemicals are applied on Japanese golf courses: zeolite, a carcinogenic applied to the soil to encourage the grass to grow; soil-coagulating agents to hold the water in artificial lakes (one of which, Acrylamid, is extremely toxic but is still used despite a Japanese government ban); and a carcinogenic artificial colouring agent to make the turf greener.³² None of these substances can be removed in water treatment plants. Golf courses located in upland water catchment areas are particularly dangerous because the toxins are washed down from the courses, contaminating lower-lying water sources, fields and residential areas.

In 1990, the Japanese government passed legislation to control and prohibit the use of several chemicals on golf courses, a measure which Thai environmentalists feared would only spur their import into Thailand. Details of chemical use in Thai golf courses are not yet available because golf course owners refuse to give any information to the public or to scientists. Instead the newly-formed Thai Golf Association has stated that it will conduct its own research into the social and environmental effects of golf course development.³³ As a result of high exposure to chemicals, many caddies, greenkeepers and residents

near golf courses in Japan suffer from eye irritations and skin diseases. Workers on Thai golf courses are gradually coming forward with health complaints, such as allergies, rashes and sores attributed to hazardous chemicals.³⁴Caddies in South Korea have complained of nausea and headaches on the courses after agricultural chemicals were sprayed; two of them have given birth to malformed babies. Eight highly poisonous agricultural chemicals, including demeton-S-methyl and endosulfan, which are still sprayed on South Korean golf courses even though their use is prohibited by law, can cause loss of eyesight, speech impediments and paralysis if they are inhaled or come into contact with the skin.³⁵

Job Creation

Proponents argue that golf resorts earn foreign exchange and create jobs, which more than compensate for any adverse ecological and social impacts. The vice-president of the Bangkok Bank asserted that one golf course provides 1,000 jobs, while a farm covering the same amount of land can barely support 50 people. He was presumably referring to a fully-rationalized agribusiness farm rather than more traditional livelihoods which could support many times that number of people, depending on fertility and region.³⁶ He concluded of one of the world's main rice-growing and exporting countries: "Thailand should import rice and grow grass."³⁷

In fact, the jobs associated with the golf boom are temporary or insecure. During the construction phase of the golf resort, some 200 to 300 labourers are needed for about two years, paid daily rates of 60-70 baht (\$2.60) for men and 55-60 baht (\$2.40) for women, higher than the typical agricultural casual labourer's wage of around 30-40 baht (\$1.20-1.60). But when the local construction labour market collapses after two or three years, many villagers have no work to do, nor any fields to return to and are forced to migrate elsewhere. In the northeastern village of Khlong Kut, farming households dropped from 81 per cent of the community to 18 per cent in just four years. Only three of the 106 households now derive their main income from agriculture.³⁸

Once the golf course is operating, only 30 to 40 people are employed as greenkeepers, guards and clubhouse staff, earning not more than 100 baht (\$4) per day. When new technologies such as water sprinkling systems, large grass mowing machines and vehicles to apply fertilizers and pesticides are introduced, the number of workers goes down to about ten.39 Although a golf course recruits some 300 to 600 caddies, most of whom are women, a caddy has to wait in line with all the others for work. One round of golf pays 100 baht (\$4), 50 baht (\$2) extra if the "masters", as the caddies call the golfers, play more. If there are no players, there is no income. Added insecurity comes from the worldwide trend to replace caddies with electric golf carts. Getting a good income from the job may require more than carrying bags and giving advice.40 One caddy from Kud Khlaa village near the Khao Yai national park in northeastern Thailand commented:

"I'm not beautiful and I'm not good at talking, so I only get small tips. Beautiful women who are good at talking and pleasing their customers can make a lot of money. Some caddies are taken out by Japanese or *farang* (Western) golfers to . . . sleep with them."⁴¹ Older people, however, usually have little chance of finding employment.⁴² The sharp rise in living costs as a consequence of the tourism invasion contributes further to the impoverishment of local people.

Foreign Exchange Leakage

The bulk of the foreign exchange earned from golf courses and golf tourism does not stay in the local economy. If any local people gain from golf resorts, it is, at best, a few wealthy business people and patrons.

Much of the capital behind the wave of golf resort development comes from outside Thailand. Official Japanese aid has supported the systematic development of tourist resorts in many Third World countries: the Overseas Economic Cooperation Fund provides yen loans for tourist-related infrastructure, matching private investment in hotels and recreation facilities.⁴³ Much of Japanese Official Development Assistance funds are closely tied to purchases of Japanese goods and services.⁴⁴ The projects are coordinated through the Japan International Cooperation Association which develops tourism master plans for various countries, dispatches "experts" in tourism development and conducts training sessions in Third World countries for travel agencies to attune them to the demands, values and ways of Japanese tourists.⁴⁵

Many golf projects in Thailand are more or less owned by foreigners. Although land ownership by non-Thais is legally restricted to joint ventures in which over 60 per cent of the capital is Thai, and property ownership to those which are 51 per cent Thai-owned, the law is often circumvented. For example, the Japanese Real Estate company in the major Thai northern town of Chiang Mai introduces Japanese investors, for a nominal fee, to Thai nationals who will lend their names to land-buying ventures. The actual extent of Japanese and other foreign investment in Thailand does not, therefore, show up in official landownership statistics.⁴⁶ Investors from Japan, Taiwan, South Korea, Singapore, Europe and the US are nevertheless estimated to hold a 40 per cent stake in Thailand's golf courses.

Only a few Thai developers have enough capital to meet the high costs of golf course construction and maintenance — \$48 million for a standard course, excluding designer fees to internationally well-known professionals.⁴⁷ Others depend on heavy borrowings in addition to investments from abroad. From 1987 to 1990, the Bank of Thailand estimates that up to 100 billion baht (\$4 billion) of foreign capital went into more than 100 new golf course developments in Thailand. Currency leaks out of the country when these loans are repaid.

Imports into Thailand are another cause of foreign currency leakage. Most of the equipment and materials used to construct, maintain and use a golf course, such as machinery, grass seeds and chemicals, have to be brought into the country. For one golf course, around 100 million baht (\$4 million) is spent on Bermuda grass, which comes mainly from the United States. Players' equipment and clothes are produced abroad. Golf clubs worth 45 million baht (\$1.8 million) and golf balls worth 18 million baht (\$612,000) were imported into Thailand in 1989. The total import of golfing materials has resulted in a currency leakage of some 12 billion baht (\$480 million) in the last three years alone.⁴⁸ Thus the profits made out of golf course development do not trickle down, but are rather creamed off and whisked away.

The Golf War

Although the worldwide boom in golf courses and their associated resorts may have made a hole-in-one on the first round of expansion, completing the course will be harder, as opposition from local people, grassroot-oriented groups and non-governmental organizations has sprung up in nations of the North and South alike.

In Japan, a strong local movement has arisen against the environmental impacts of golf courses, in particular against deforestation and contamination of air and water sources by widespread use of chemicals. The construction of over 100 golf courses has been prevented by legal action instigated by local people.49 In 1989 various local opposition groups joined together to form the National Network on Golf Course Development. Faced with such objections, 26 Japanese prefectures have established some form of regulation banning or limiting golf course construction.50 A local election in eastern Japan's rural community of Kitaibaraki in November 1990 was a milestone in Japan's grassroots resistance to golf courses. When the incumbent mayor gave permission for the building of ten new courses surrounding their coastal town, housewives, farmers and shopowners joined together to seal a pact with the mayoral challenger to halt the development of the courses. The environmentalists won the argument, and their anti-golf course candidate was elected as mayor.51

In Thailand, golf course and tourist development is just one of the many threats to the environment and people's way of life. Over the last few years, villagers, NGOs, students and academics have joined the growing criticism against the government's land and forest policies,⁵² insisting that commercial development projects, such as eucalyptus plantations, fish and shrimp farms, dams, salt mining, and hotel and golf course complexes entail immense social, economic and ecological costs which are borne by poor and landless people. Their main question has been not how to fight golf courses as such, but how to handle the manifold conflicts between rural people and industry over the use and protection of limited natural resources. Adequate landholding rights and guarantees of rural people's access to land, forests and water sources for their survival should be a first priority in resolving them.

Some government officials, finance representatives and members of parliament are not only aware of the conflicts caused by large golf resorts and land speculation but have tried to control their proliferation, for example, by introducing a land reform Bill and halting credit to golf course developers. But these efforts have, by and large, failed because of corruption and vested interests. In the boom years of golf and property development, the Prime Minister presided over more hotel parties to promote proposed golf resorts than anyone else. More than half his Cabinet played golf; military and police officers from the top down were enthusiastic advocates of the sport. Many of the élite had stakes in golf resort developments.⁵³

Much solidarity is therefore needed to bring about change for the benefit of all people affected by golf resorts. There is usually more political scope for people's organizations in Japan, Europe and North America to lobby and take action than those in other regions and countries. But the more that golf courses are restricted in affluent countries, the more they are likely to surface in poorer countries for golf-addicted tourists who cannot play at home, as has happened in Japan and southeast Asia.

Asia in the bunker

Other Asian countries are trying to follow the example of successful golf tourism destinations such as Thailand. On the island of Cebu in the Philippines, a Japanese company has bought up 50 hectares from small fishers and farmers and plans to acquire another 100 hectares to construct a golf course, marine resort and hotel in the middle of the island's western coast. The company initially paid less than 20 pesos (US\$0.70) per square metre for the land until landowners began to demand higher prices. Even though the company then had to pay over 50 pesos (\$17.50) per square metre, it can expect an initial income of 600 million yen, having spent at most 150 million yen for the land. The Cebuano farmers and fishers, however, will lose their livelihoods as the land and waterfront will be off limits to them.

Flush with the success of seven million tourists in the 1990 Visit **Malaysia** Year, the Ministry of Tourism there aims to attract 18 million visitors a year in the next decade. Golf courses and beach resorts are central to this strategy. The country has about 75 golf courses, but another 125 are planned by the year 2000.

Situated on the fringe of a 6,400 hectare nature park, the Templar Park Country Club, the first golf and country club in Malaysia, opened at the end of 1991, boasting that it was the first golf course with women caddies. A club in Selangor offers "a lifestyle so leisurely and so gracious that, thankfully, it can be enjoyed by only a select few."

The Pahang state government is expected to turn Fraser's Hill, 465 metres above sea level, into one of the most extravagant highland resorts in the world by the year 2000, including a M\$26 million (US \$10 million) golf resort.

The negative impacts of golf courses are already becoming clear. At the foot of the highest mountain on Langkawi Island, output from the rice fields has dropped by over 60 per cent because road construction for a hill-top resort has sent tonnes of earth into the streams which watered the farmers' fields. Acres of the island's tropical forests are being logged to clear the way for



The Chinese national team practise for the Dunhill Cup at their home ground in Chung San. China is a new convert to golf tourism; others include Laos and Burma. The Golden Paradise Resort is being developed by Thai investors on the Burmese side of the Golden Triangle.

golf courses, and soil erosion is already apparent. Environmental groups and the public, however, are protesting. They prevented the proposed development of Penang Hill — a critical water catchment area supplying almost half the water needs of Penang Island into an international resort complex including golf courses. Soil erosion, landslides and downstream flooding had been predicted if it had gone ahead.

Lack of space in Singapore, a country 42 kilometres wide and 22.5 kilometres long, means the island has one of the highest densities of golf courses in the world: eleven courses cover 1,200 hectares and a further ten are planned. The first of several largescale projects are in the pipeline, many of them located in Singapore's 'hinterlands' - Johore on the tip of Peninsular Malaysia and the Indonesian Riau Islands to the island's south. On Bintan island, a 16,000 room resort should be open by 1993 with 13 golf courses. One of the most ambitious ventures is the Paradise Bay Golf Resort on Batam island, which is being jointly created by the Japanese, Hong Kong and Indonesian private sector, but the Indonesian government has to provide the necessary water, electricity, roads and airport infrastructure.

The rest of Indonesia is trying to catch up with its Malaysian and Thai neighbours. In the north of Jakarta at the Taman Impian Resort which has been in operation since 1967, a world-class golf course is just one of the recreational options in the huge beachfront complex.

As in Malaysia, there is resistance. Farmers from Cimacan in West Java have been fighting a protracted battle in the courts to stop 32 hectares of their land from being turned into a golf course. The vegetable-growing farmers were forcibly ejected from the land by company bulldozers two years ago.

Tourism to India has been heavily promoted in the last two years, with 1991 being declared Visit India Year. But not enough attention has been paid to golf, say tourism advocates, even though the country has the highest altitude golf course in the world in Kashmir at 2,700 metres. They declare: "There has to be a reorientation in thinking to integrate sports in general, and golf in particular, in our tourism promotion . . . India can rightfully boast of golf courses in every kind of terrain - in the mountains, on plains, in deserts and in the southern peninsula."

A 1991 Golf in India brochure acknowledges that the country still has to rely on the West for golfing equipment, so visitors are advised to bring their own sets and an ample supply of balls.

Sarah Sexton

1. Golf Digest, US, cited in Commission Internationale pour la Protection Régions Alpines (CIPRA) Sport and Umwelt im Alpenraum (1) Golf, CIPRA Petite Serie Documentaire 6/90, Vaduz/Liechtenstein 1990.

2. In Europe, decreasing industrial production and increasing unemployment have spurred speculative investments in tourist resorts, amusement parks, sports facilities, and a combination of all three — golf resorts. These have been actively promoted partly to shift land use from agriculture, a policy designed to reduce the European Community's agricultural overproduction. Local government authorities, especially in less developed areas, often favour golf courses in the hope of attracting investors to boost the local economy. The German minister for agriculture has suggested that golf course construction is an appropriate alternative to traditional agriculture. A lucky few farmers now make a profit by renting out their land to golf course developers, sometimes being employed as greenkcepers as well. See Kröger, K. 'Immer mehr Bauern bieten ihre Äcker an', *Der Spiegel* 32/1988, pp124-129. In Britain where set-aside policies to reduce agricultural surpluses include allowing non-farming uses for agricultural land, golf courses seem increasingly attractive as a new crop.

3. McCormack, G. The Price of Affluence: The Political Economy of Japanese Leisure, working paper, Australian National University, Research School for Pacific Studies, Canberra, 1991.

4. Kuji Tsutomu, 'The Political Economy of Golf', AMPO Japan-Asia Quarterly Review, Vol.22, No. 4, 1991, pp47-54.

 5 Economic and Social Commission of Asia-Pacific (ESCAP), 'Tourism Promotion in Developing Countries of the ESCAP Region: How to Approach the Japanese Outbound Travel Market', *ESCAP Tourism Review*, No. 4, 1988.
 6. Dila, A. 'Golf travellers turn Thailand's greens into gold', *Saen Sanuk*, Bangkok, August 1987.

7. Ibid.

8. In Europe as in Japan, demand for golf courses far exceeds supply, and the sport is expensive. Reacting swiftly to this desire, the tourism industry now provides golf in readily-available package form. An estimated 50,000 British golfers book a package abroad every year (see 'Golfing holidays', Supplement of UK Travel News, 1991), most of them to European destinations. France and Ireland capture the short-break market, but German, Swiss and Austrian alpine areas are catching up fast, making huge investments in golf course developments to attract summer visitors in addition to their wintersport tourists. (see CIPRA, op. cit. 1.) Spain has been trying to attract back tourists with golf. Thirty golf courses are now lined up on a narrow 50-kilometre strip in the Costa del Sol, but it is the Algarve in the south of neighbouring Portugal which ranks as the number-one golf destination in Europe. Further afield, Tunisia and Morocco aim to complement their seaside resorts by building golf courses, often with capital from Middle Eastern oil states, promoting their additional attraction of wintersun.

9. The Nation, Bangkok, 15 March, 1991.

10. The growth of expatriate communities due to accelerated foreign investment in southeast Asia has been an added stimulus to the construction of luxury housing in combination with golf courses. Parallel to the growth of corporate involvement in European golf, multinational companies and banks buy up houses and apartments for their staff. The golf and country club has become popular among the local upper-class as well who buy second homes as a retreat from the congested and polluted cities.

11. Siamrat Sapda Wijaan, 37/49, 1991; Ponchai Termwaree, 'Wikritkaan thii din kasetakam nai yuk thii din mii raakhaa', Vitoon Panyakul, ed. Weethii chaaw baan '34, NGO Coordinating Committee on Rural Development, Bangkok 1991, p.402; 'Agricultural Land Crisis in the Period of High Land Prices', Vitoon Panyakul, ed. Abstract seminar papers, 1991 People's Forum, NGO Coordinating Committee on Rural Development, Bangkok 1991, p.25.

12. The Nation, Bangkok, 4 April, 1991.

13. The number of land transactions increased ten-foldbetween 1986 and 1990 in the eastern provinces of Chachengsao, Prachinburi, Chonburi and Rayong, the southern provinces of Phangnga and Phuket, the central provinces of Nakorn Nayok, Ayuthaya, Phetchaburi and Prachuab Khiri Khan, and the northern provinces of Mae Hong Son, Chiang Mai and Lamphun. In nine of these provinces, extensive golf course construction has followed industrial or tourism development. More than ten courses have been constructed in each of the provinces of Phetchaburi, Chiang Mai, Kanchanaburi and Chiang Rai. Kanchanaburi alone has 29 courses with Phetchaburi a close second. *See* Ponchai Termwaree, op. cit. 11, pp.402-403.

14. According to the National Economic and Social Development Board, the wealthiest 20 per cent of the population took a 49 per cent share of the Gross National Product (GNP) in 1975, a stake which rose to almost 55 per cent by 1986. Over the same period, the poorest 20 per cent of the people saw their share drop from 6.1 per cent to 4.6 per cent. In 1989, the per capita annual income in the capital, Bangkok, averaged 25,400 *baht* (\$1,016) while in the northeast of the country, the average was 5,800 *baht* (\$232). *See also* Lohmann, L. 'Land, Power and Forest Colonization in Thailand', in Lohmann, L. and Colchester, M. eds, *The Struggle for Land and the Fate of the Forests*, Third World Network,

Penang/Zed Books, London and New Jersey (forthcoming).

15. 6.25 rai = 1 hectare; 25 baht = US\$1.00. See Pleumarom, A. Spatial and Environmental Implications of Tourism in Northern Thailand, unpublished paper.
16. Ponchai Termwaree, op. cit. 11, p.403, p.25.

17. The Nation, op. cit. 12.

18. Ponchai Termwaree, op. cit. 11, p.403, p.25.

 Report of the Labour Force Survey, conducted in 1988, National Statistical Office, Bangkok. Manufacturing and wholesale trade together account for just over 40 per cent of GDP, while tourism is considered the number one foreign exchange earner. See National Economic and Social Development Board, annual report.
 Siamrat Sapda Wijaan, op. cit. 11.

21. Preecha Lehbaankoh, 'Golf course business and community problems', paper presented at seminar *Golf Courses and the Economic and Environmental Impacts*, organized by the Thai Environmental and Community Development Association ('Magic Eyes') and the Environmental Engineers Association, Bangkok, 17 December, 1991.

22. Ponchai Termwaree, op. cit. 11. p.26; Anchalee Romroen, 'Golf sii khiew: fashion mai thii ma prhom kap panhaa?' (English abstract 'Golf: From a Sport to a Hunting of Poor People'), *Decade*, Dec1991/Jan1992, pp71-80.

23. Ponchai Termwaree, op. cit. 11, pp405, 408.

24. Ponchai Termwaree, op. cit. 11, pp26-27.

25. To design bigger courses in Thailand in a faster and cheaper way, two US engineers employ satellite data and aerial photography to show aspects of a site, such as access roads and water supplies. Their computer can plan the elevation of greens to the nearest centimetre, calculate how many tonnes of earth have to be moved and build a complete three-dimensional working model. See Golf Travel Asia, Summer 1991.

26. Kirk, J. and Jacobs, T. The Golf Courses of Robert Trent Jones Jr, Hong Kong, 1988.

27. The Nation, Bangkok, 5 July, 1991.

28. Siamrat Sapda Wijaan, op. cit. 11.

29. The Nation, op. cit. 12; 7 July, 1991.

30. Kuji Tsutomu, op. cit. 4.

31. Ibid.

32. Ibid.

Achara Deboonme, 'Building golf's image', *The Nation*, 7 February, 1992.
 The Nation, 7 July, 1991.

35. Korea Newsreview, published in The Nation, 12 December, 1990.

36. Due to the fertility of the rice lands, a family owning about five *rai* of land in the upper north can usually produce enough rice for its own consumption. In the northeast, villagers grow one crop of rain-fed rice annually, when they can, but need about 15-20 *rai* per family to grow enough for their own needs. See Sanitsuda Ekachai, *Behind the Smile:Voices of Thailand*, Thai Development Support Committee, Bangkok 1990, pp20, 125. See also Hirsch, P. Development Dilemmas

in Rural Thailand, Oxford University Press, Singapore 1990, p. 26. 37. 'Getting into the swing', *Asiaweek*, 21-28 December, 1990, pp58-63.

38. Ponchai Termwaree, op. cit. 11. p. 422.

39. The Tourism Authority of Thailand does not deny that golf tourism is based on cheap labour. Its brochure declares that "low labour costs in Thailand mean that clubs.. can afford the luxury of large groundstaff to maintain the fairways and greens in absolutely tip-top form."

40. Thai and Malaysian female caddies have been sent to Japan for training to learn the "finer arts of etiquette". See Chee Yoke Ling, 'For Only a Select Few', AMPO Japan-Asia Quarterly Review, Vol.22, No.4. 1991, pp32-33. 41. Anchalee Romroen, op. cit. 22.

41. Anch 42. Ibid.

43. Noda Misato, 'ODA and Resorts: Investing in Mal-Development', AMPO Japan-Asia Quarterly Review, Vol.22 No. 4, 1991.

44. See Forrest, R.A. 'Japanese Aid and the Environment', *The Ecologist*, Vol.21, No.1, Jan/Feb 1991, pp24-32. In 1987, the Japanese Ministry of Transport launched its Ten Million Programme to double the number of outbound Japanese tourists from 5.52 million in 1986 to 10 million by 1991 in an attempt to lessen the imbalance in payments between Japan and its trading partners. It was extremely effective: 10.9 million Japanese travelled abroad in 1990.

Economic and Social Commission of Asia-Pacific (ESCAP), op. cit. 5.
 Inoue Reiko, 'An Army of Japanese Tourists', AMPO Japan-Asia Quarterly

Review, Vol.22 No.4, 1991.

47. Kuji Tsutomu, op. cit. 4.

48. Anchalee Romroen, op. cit. 22.

49. Kuji Tsutomu, op. cit. 4.

50. Inoue Reiko, op. cit.46.

51. The Nation, Bangkok, 14 December, 1991.

52. Lohmann, L. 'Commercial Tree Plantations in Thailand: Deforestation by Any Other Name', *The Ecologist*, Vol.20, No.1, Jan/Feb 1990; 'Who Defends Biological Diversity? Conservation Strategies and the Case of Thailand', *The Ecologist*, Vol.21, No.1, Jan/Feb1991.

53. Achara Deboonme, op. cit.33.



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The Fog Factor

GREEN LIGHT ON EUROPE,

edited by Sara Parkin, Heretic Books, PO Box 247, London N17, 1991, £9.95 (pb), 367pp. ISBN 0-946097-29-1.

This collection of 29 essays, by contributors from some 16 countries of Europe and North America, is a timely attempt to address from a green perspective some of the key issues facing Europe. The collapse of the former communist bloc and the drift towards greater unity in the European Community (EC) should combine to provide a wide and eager readership.

There is plenty to provoke thought and discussion of what a green vision of Europe should mean. A few of the essays deserve special mention. Anyone who still believes in material growth should be directed to a lucid paper by Freda Meissner-Blau and Peter Blau, describing the parasitic nature of the EC in relation to the Third World. They point out that the EC target of four per cent growth per annum means that children born today would, by the age of 70, require 16 times the present volume of goods and services merely to avoid market crises. Sandy Irvine's paper on the need for population control complements this point. Increased consumption is equally damaging be it due to a rising population, supposedly higher living standards, or a combination thereof.

Norwegian peace activist, Johan Galtung, presents an overview of green politics for Europe in the 1990s and beyond. Sweden's Per Gahrten sets out basic demands that a European collaborative body should meet, and concludes that the EC fails on every count. Jacob von Uexkull, chair of the Right Livelihood Foundation, offers a timely warning of the failures of green parties. All should be widely read, and not just by greens. Elsewhere, there is a mixed bag of contributions on economics. Five essays present ideas — such as markets in resource efficiency and land reform — that ought to be of interest to policy-makers of all parties. But these need to be argued both more simply and more rigorously if they are to gain wide acceptance.

At a time when discredited monetarists are trying to flog their worn-out theories to the ex-Marxists, we need a new economic framework for the whole of Europe, one which draws on the experiences of both east and west. One of the strengths of this book is that it gives us the views of politicians and environmental groups from throughout eastern Europe, even though all of the economics essays are contributed by westerners.

Unfortunately, although many of the essays are highly informative and well written, the book as a whole is something of a mess. Karen Christensen's article, 'With the Earth in Mind: the Personal to the Political', makes a splendid general introduction (or would, if it were not at the back of the book). This is the kind of writing that can inspire 'unconverted' people to examine their lives and change their ideas; provided, of course, that the unconverted ever get to read it.

The essays are not arranged in a very rational order, and, despite Ms Parkin's imprint, show no sign of having been edited by anyone. The subject matter is wide - some may think it too wide - yet there are important omissions. The book is unfocused and poorly structured; it has no index, no summaries and few crossreferences. The publisher notes that "readers will easily find from the Contents what particularly interests them". This may be partially true if the readers in question are dedicated and well-informed greens, who will be familiar with many of the authors and know who to turn to. But the general reader, wondering what Europe's greens think about the Common Agricultural Policy, a unified currency, common security, trade and industry, or energy and transport policies, will find that some of these issues are hardly mentioned at all. This is a basic fault: if green political writing is to be effective, it has to address the issues that concern people today, as well as leading them to consider the issues of tomorrow.

Matters are made worse by an indul-

gence of bad writing. Jargon, pretentiousness, meaningless phrases and too many long words — common faults of political writing identified by Orwell over 40 years ago — are found here in profusion.

To conclude, this is a collection whose whole is sadly less than the sum of its parts. With less haste, the publishers could have moulded the best of these contributions into a superb and influential book. As it is, the "green light" struggles to be seen through a layer of fog.

Hamish Soutar

Hamish Soutar is a British peace campaigner, and currently co-editor of a green community paper in Wiltshire, UK.

Foreclosing Nature

BIOSPHERE POLITICS, by Jeremy Rifkin, Crown, New York, 1991, \$20 (hb), 384pp. ISBN 0-517-57746-1.

This important book begins with a sweeping account of real history - as opposed to the chauvinistic self-congratulation that normally passes as such. Rifkin demonstrates convincingly that the enclosure of the global commons is central to our history. The process began with the land enclosures of late medieval England and has expanded across land, sea and sky until it has now reached, with the patenting of marketable plants, the genetic code of life itself. Rifkin considers the initial step in this process to be the establishment of market forces. Had the Catholic Church held by its belief that usurers were taking out a time-share scheme in Hell, the development of market forces might have been held back; however, usurers were given a cosy escapeclause in the form of purgatory and thus Christendom, and eventually the whole planet, were opened up to economic forces. The role of the nation state in history has been that of a war machine engaged in geo-political strategy to enclose as much of the global commons for its own use as it can.

The second strand in the book is an account of the sensory decline of the human psyche which parallels global enclosure. Humans, seeking security in the abstract workings of the machine, have



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Telephone (0803) 865934 Fax (0803) 866899 been steadily isolating themselves from the holistic reality of life, which in medieval times included communal bathing and sharing much of life with animals and where, according to historian George Duby, "solitary wandering was a symptom of insanity." Seeking a state of rational immortality, humans have dissociated themselves from their animal nature, (and, incidentally, projected their worst failings upon the animal world), by ceasing to touch their fellows, becoming terrified of odour and steadily downgrading all the senses except that of the masculine abstracting eye. This degeneration is now reaching its logical nadir, as we are sold a computerized "virtual reality" to replace the full sensual wonder of natural life.

Only the third strand of the book can be called "biosphere politics" and here Rifkin suggests that the system of global enclosure will break down through its inherent contradictions. Intercontinental ballistic missiles have not led to security for any superpower and there is no security for any one nation when all are dependent on the biosphere for survival. It is possible for the strong to pillage the biomass of the weak, but it is impossible to escape the ecological effects of the pillage. Donne's observation that "no man is an island" has taken on an ominous new meaning. With the rise of global market forces and multinational corporations, the nation state is becoming obsolete. Rifkin sees hope in the growth of bioregionalism and hazards many useful suggestions: for example, US pension fund holders, worth over 700 billion dollars, should seek control over their own funds. "The banks have used these capital assets to shift jobs and production around the world, sometimes undermining both the job security of the workers, whose funds they are using, and the local economies from which the funds were generated."

This book is a major overview of human life, glittering with perceptive insights concerning both the rise of the predatory nation state and the psychic degeneration of the person. Only the penultimate chapter is suspect, where Rifkin analyses planetary problems in terms of the Freudian *thanatos* or death instinct. Freud's thinking was deeply marred by a mechanistic quality and the *thanatos* instinct, which never really caught on as a theory, contradicts Rifkin's own much more plausible idea, that it is humanity's drive to domination that has led to the present predicament. "The negation of nature," said Locke, "is the way to happiness". It is hard to put the politics of the biosphere any plainer than that.

Joe Potts

Joe Potts is a freelance writer and musician based in Blandford Forum, UK.

Weight of Evidence

PROTECTING THE EARTH, Third Report of the Enquete Commission of the 11th German Bundestag, edited by the German Bundestag, Bonn, 1991, Vol.1, 672p, Vol.2, 1008p. ISBN 3-924521-71-9.

This offering from the German parliament puts the efforts of its British counterpart in perspective. UK Select Committees may do gallant work, when witnesses are willing to speak to them, but Germany's Enquete Commissions are serious business. This particular report provided the basis for the German government's widely-publicized recommendation that the former West Germany should reduce its carbon dioxide emissions by 30 per cent from 1990 levels by the year 2005. The British commitment, you may recall, is to try to stabilize emissions at about 1990 levels - not too difficult an aim when emissions have actually been falling recently in the UK.

The broader recommendations of the German commission have been less widely-publicized. The proposed German reduction is in fact seen as part of a package, with an overall reduction of about 20 to 25 per cent called for at the level of the European Community, and with 30 per cent in all the economically-strong industrialized nations allowing the weaker nations more leeway (perhaps this is the clause that lets Britain out). The report actually calls for 20 per cent reductions in carbon dioxide emissions by *all* industrialized nations by 2005.

The reasons for these recommendations scarcely need rehearsing here, although it is perhaps worth mentioning that recent newspaper articles, dismissing the greenhouse effect as "hot air" (and usually quoting the maverick British MP, Teresa Gorman) are wildly inaccurate. Some of the computer model calculations of the pace of global warming have indeed recently been revised downward, but these new estimates are still within the range of uncertainty encompassed by the Intergovernmental Panel on Climate Change (IPCC) reports to the World Climate Conference. There is no scientific uncertainty about the fact of global warming; the only uncertainty covers possibilities that range, if no action is taken, from absolutely terrifying to merely horrible.

This report addresses the problem of ozone depletion, caused by the release of chemicals as a result of human activities, as well as global warming. The summary alone runs to some 76 pages, packed with information in the form of tables, charts and colourful diagrams that will be provide ample ammunition for anyone actively concerned in trying to spread information about the twin problems of global warming and ozone depletion.

The bulk of Volume One of the report consists of an extremely thorough overview of the greenhouse effect in the context of past climatic changes, and a survey of the ozone problem which is no less thorough, but necessarily shorter, since there is less historical information. It is a delight to have all of this information conveniently packaged in one volume, which ought to be required reading for Teresa Gorman.

But it is in Volume Two of the report that the Enquette Commission really comes into its own. In the light of the evidence presented, no British government could ever credibly assert that serious action to reduce emissions of greenhouse gases is impossible. Energy supply, industry, agriculture and transport are all addressed in this sweeping survey, and no punches are pulled. The section on nuclear power, for example, is accompanied by no less than four "dissenting opinions", all well worth reading, and another addresses the necessity of including East Germany in the overall plan, a problem against which any local British difficulties pale into insignificance. Every issue is analysed in an international context, both within the European Community and globally, and a draft for an International Climate and Energy Convention (based on the Montreal Protocol that restricts emissions of CFCs) is put forward for consideration in the run up to the UN Conference on Environment and Development, to be held in Brazil in June 1992.

The clear message that emerges from

this well-researched and comprehensive study is that it is possible to reduce the emissions of greenhouse gases and ozonedepleting gases without destroying the global economy. Although it is rapidly becoming a cliché, it is none the less still worth repeating that the looming "threat" of economic collapse and unemployment caused by the decline of so-called defence industries in the absence of anyone to defend ourselves against, offers an obvious opportunity to redirect efforts in some of the directions discussed here. And in that connection, it is worth remembering what happened when clean air legislation was introduced in the Federal Republic of Germany.

At first, industry complained about the detrimental economic impact. Then, they developed efficient systems to scrub pollutants from factory and power station chimneys. Finally, having established a technological lead, they sold the systems to other countries, providing a shot in the arm to the German economy. If MPs of the Gorman persuasion still cannot see the light, this second volume, being the heavier of the two, might usefully be used to knock some sense into them.

John Gribben

Dr John Gribben is the author of Hothouse Earth (Black Swan, 1990) and The Hole in the Sky (Corgi, 1991).

Shiva's Locks

THE THIRD CITIZEN'S REPORT ON THE STATE OF INDIA'S ENVIRONMENT, edited by Anil Agarwal and Ajit Chak, Centre for Science and Environment (CSE), New Delhi, 1991, US\$35 (air)(hb) and US\$25 (pb) (available for individuals only), 167pp.

The Centre for Science and Environment (CSE) is one of the major architects of India's vigorous and incisive conservation movement. Its pioneering 1982 *Citizen's Report* successfully snatched India's nascent environmental movement away from élitist, urban-based wildlife groups, and handed it over to the capable hands of the people of rural India, as a human rights issue. The Second Report in 1985 highlighted the "plight of politically marginal groups like women, nomads, fisherfolk and tribals as a result of environmental degradation and loss of control over the natural resource base." The late Prime Minister, Rajiv Gandhi, was spurred into stipulating that all the 27 Parliamentary Consultative Committees should attend CSE environmental presentations. Now, more than half a decade later, comes CSE's *Third Citizen's Report*, sub-titled 'Floods, Flood Plains and Environmental Myths' which is dedicated, "To those who have learned to live with floods".

I wish I could say that I welcome the report without reservation. Regretfully, CSE has shot itself in the foot.

The introduction to the third report states that "Himalayan environmental degradation must be arrested and reversed but not so much for the benefit of the plains dwellers as for the survival and improved living standards of the hill dwellers." If Agarwal and Chak are to be believed, deforesting the Himalaya might be perfectly in order ... if only no humans lived on its slopes. "Floods in the plains may not be greatly exacerbated by deforestation. Floods are, in fact, and will remain, an inherent feature of these plains whether the Himalayan mountains are well clad with a green cover or whether they are deforested and barren".

The authors consider that, in recent years, too much focus has been placed on deforestation and its ill-effects, including floods, and not enough to managing the flood plains. This allows politicians to evade their flood-control responsibilities in the plains, by blaming all floods on deforestation in the hills. It is presumably to draw attention to the flood plains that the editors have expressed extremely subjective opinions, which fly in the face of their own data.

Few would argue seriously against the need to learn to live with floods. No amount of technical ingenuity will prevent them occurring, and the object of floodplain development should be to use them, as far as possible, to good advantage for the irrigation and fertilization of agricultural lands. Ancient peoples were well aware of this, and the point has been pressed home in the last few decades by many environmentalists. Would that the Third Citizen's Report restricted itself to rehashing these well established facts. Unfortunately, they proceed to play down one of the most effective and inexpensive ways to control floods - the protection of the Himalayan forests.

"Deforestation over the last few centuries," the editors maintain, "has definitely exacerbated the unpredictability of the Himalayan rivers and their silt load, but they are naturally so flashy and silt laden that the increase over the natural condition does not seem to be particularly high." This is the same specious argument as that used by the nuclear industry when it claims that since natural radiation exists anyway, no harm can possibly come from adding "just a little" more radiation through nuclear reactors. Besides, figures collected by the editors' own researchers reveal that over 44,000 kilometres of road construction in the Himalayas have resulted in between 1,760 and 3,520 million cubic metres of debris. If this one aspect of Himalayan deforestation can cause so much potential siltation, it defies logic to suggest that the combined effects of the timber industry, mines, dams, fuel gathering and fodder extraction on unstable slopes have no more than a "minor" influence upon siltation and flooding downstream.

By belittling the effect of deforestation on floods, the authors ignore the one factor which can mean the difference between life and death in the event of a flood — time. Flood prediction is a very tricky proposition and even an hour or two between a warning and the actual flood can save thousands of lives. It is self-evident that water flows faster over naked slopes than thickly forested ones. Forests staunch the rain, particularly the initial downpour, slow the run-off, and provide crucial extra time for people to climb to safety.

The people of the Himalaya will probably never read the CSE report. They hardly need to. Their legends tell how the fierce Ganga, descending from the mountains, was caught in the locks of Shiva's hair. This tempered her torrent, which otherwise would have carried humanity to the deepest hell. In this age of science it has become almost fashionable to write off the wisdom of ancient India as no more than mumbo jumbo. But today the forests of the Himalaya, like Shiva's hair, fight to tame the fierce velocity of the holy Ganga's descent. By ignoring this simple truth, CSE neither follows the tenets of our ancient learning, nor that of science.

Bittu Sahgal

Bittu Sahgal is editor of Sanctuary magazine, New Delhi.

BOOKS DIGEST

 EXPERTS IN THE AGE OF SYSTEMS, by William Ray Arney, University of New Mexico, Albuquerque, USA, 1991, 242pp. ISBN 0-8263-1268-3.

Brilliant, uneven, and doggedly original, this study of the Manhattan Project probes the new moral universe dominated by "systems" which has taken shape in America and Europe this century. How, Arney asks, are we to live in this universe and to understand the roles of these "dead but real executives of the inevitable" who are modern systems experts? One of the most important books on political ecology to appear during the last year.

 ENVIRONMENT AND ECONOMY: Property Rights and Public Policy, by Daniel W. Bromley, Blackwell, Oxford, UK and Cambridge, USA, 1991, 247pp. ISBN 1-55786-087-4.

Arguing that the economics of natural resources cannot be understood without a thorough analysis of different types of property regime, the author offers one of the most magisterial of recent refutations of the "tragedy of the commons" myth which has plagued scholarship and policy for so many years.

 MARKETS, RESOURCES AND THE ENVIRONMENT, edited by Alan Moran, Andrew Chisholm and Michael Porter, The Tasman Institute, Allen and Unwin, Sydney, Australia, 1991, UCL Press, London, 1992, £11.95 (pb), 288pp. ISBN 1-86373-025-7.

"The tragedy of the commons" theory is integral to this revealing collection of essays from the business-sponsored Tasman Institute in Melbourne. The authors conclude that only vested interests and market mechanisms can protect resources. But questions of inequity and community control rarely enter the equation, and there are some basic howlers: Australia (with 0.25 per cent of the world's population) "only accounts for 1.2 per cent of the world's CO₂ emissions".

 PULPING THE RAINFOREST: The Rise of Indonesia's Paper and Pulp Industry, by Down to Earth, The International Campaign for Ecological Justice in Indonesia, PO Box 213, London SE5 7LU, 1991, £2.50 (pb), 42 pp.

The Indonesian Minister for Industry wants to "make Indonesia the biggest pulp and paper producer in the world." This pamphlet describes how his plan is progressing and the damage it is causing. Well-known bodies such as Bechtel, Marubeni and the World Bank feature alongside such figures as Suharto's daughter, Tutut, and Muhammed 'Bob' Hasan, chief benefactor of the 'Forests Forever' campaign.

 ECOLOGY OF HOPE: Bio-Mass Conservation in Tropical AgroForestry Systems, by Bob Baars, Foundation for Ecodevelopment, PO Box 26047, 1002 GA Amsterdam, 1991, Dfl.15 (pb), 61pp. ISBN 90-7111-47-4.

This manual proposes"shred and mulch" techniques as a sensible alternative to slash and burn in tropical forests. The system involves a portable petrol-powered shredder to process forest trash, so that nutrients are preserved, while relatively small amounts of petrol are burnt. Manually operated and wood-powered shredders are not considered.

 THE PERMACULTURE WAY: Practical Steps to Create a Self-Sustaining World, by Graham Bell, Thorsons, London, 1992, £8.99 (pb), 240pp. ISBN 0-7225-2568-0.

This green lifestyle manual, written from a permaculturist's perspective, is a cut above the rest. Though Bell does not always avoid sounding patronising, his piquant observations, thoughtful exposition and striking turns of phrase testify to an original mind.

Larry Lohmann and Simon Fairlie



A Feminist Challenge

Dear Sirs (gender specific),

I have just finished reading the Jan/Feb 1992 issue of *The Ecologist*, 'Feminism, Nature, Development'; and I write to say how like a breath of smog-free air the issue on the sexual politics of environment is. I realised anew how accustomed I have become to the lack of feminist analysis in *The Ecologist*, no less than in every other journal on the environment to which I subscribe (with the exception of Jodi Jacobsen's work on women's reproductive self-determination in *Worldwatch*).

The difference between *The Ecologist* and most other western journals on the environment is that *The Ecologist* presents itself as offering a radical perspective in which the natural environment is not delinked from the social issues of power and oppression, whereas the others portray environment as a constellation of natural resources that must be managed, planned, and economically accounted for because we are running up against the limits to growth.

My concern is the following. Now that The Ecologist has given a token thematic issue to women, will it return to the womanless atmosphere that Pam Simmons describes so explicitly in her editorial, The Challenge of Feminism " . . . the perspectives of leading figures, from Pinchot and Muir to Commoner, Goldsmith, Naess, and Bookchin are still widely assumed to apply to men and women equally ... They will ignore the experience and value of women's resistance to the forces which breed and feed on wars, genocide, centralization of power, corruption and intolerance... As a result, the structural roots of the environment crisis - in industrialism, in commoditization, in commercialism and in competition and greed (and in the subjugation of women by men) - will only

ever be partially uncovered."

A brief profile of Volume 20, 1990 of *The Ecologist* reveals the statistics behind Simmons' summary:

Author Index — 5 women writing 5 articles, 28 men writing 37 articles. Women's voices and analysis are therefore heard in 11.9 per cent of the issues.

Subject Index — No subject category "women" while there is one for "indigenous peoples" with four entries, demonstrating that the journal offers (selective) analysis of the social issues of power and oppression with respect to environment.

Books by women reviewed — 4 out of 22, 3 of those 4 co-authored with men, or 4.5 per cent exclusively by women.

Editors - 0 women

Associate Editors - 2 out of 21

Will we find at the end of 1992 that Volume 22 — Issue 1 'Feminism, Nature, Development' excepted — has the same statistical profile with "women not as subjects, but as passive adjuncts to men" and the same stingy space given to women's agency, activism and thinking?

Lest you protest that you do not receive enough manuscripts from women, let me testify to my experience with you. My review of Vandana Shiva's *Staying Alive: Women, Ecology and Development* (Jan/ Feb 1990) — the only book reviewed in Volume 20 that was authored solely by a woman — was shortened without my permission, while on the next page you published a conceited and overblown letter to the Editor that was lengthier than my book review. The sender of the letter, Dorian Sagan, has made no contribution to environmentalism, but he does write with considerable male swagger.

You have never published nor written me about a book review of Female-Friendly Science by Sue V. Rosser which I submitted more than one year ago. The author applies women's studies methods and theories to teaching science in order to transform it from the male élite, uniquely alienating to women and people of colour, and destructive enterprise it has become. Recently Nicholas Hildyard returned my article, The Pocketbook and the Pill: Reflections on Green Consumerism and Population Control because the material on green consumerism "had already been covered in The Ecologist or elsewhere." I am aware, from reading The Ecologist, that some of my ideas on consumerism are regularly rehashed by male contributors. Yet, as with my article, the particular context often gives another twist to the analysis and, thus, amplifies it.

Mr Hildyard did ask me to explore the latter part of the article — the distinction between reproductive self-determination for women and population control. However, this does hint of sex-segregated expertise, where the boys write about the economic and development issues and the girls about reproductive and health ones.

In conclusion, I challenge you in the tradition forged by the People of Color coalition for environmental justice. Recently they called the "big ten" environmental organizations in the United States on their white, middle-class composition and environmental agenda, and challenged them to do something about it. Here is mine to *The Ecologist:*

- Put more feminists on the editorial board;
- Put feminism into your magazine;
- Do not treat feminist analysis as a women's auxiliary "thus dividing 'women's issues' from the 'real work'";
- Make your authors accountable for not examining male dominance when they probe the structural roots of the environmental crisis;
- Review books by feminists in proportion to their impact and importance.

Your mettle lies not in printing the admonition of Pam Simmons (and my own), but in taking it to heart, learning from it and acting on it.

Sincerely

H. Patricia Hynes

Professor of Environmental Policy Director, Institute on Women and Technology

Dept. of Urban Studies and Planning Massachusetts Institute of Technology Cambridge, MA 02139, USA

Genetic Engineering Fantasy

Dear Sirs,

My attention has been drawn to *The Flawed "Sustainable" Promise of Genetic Engineering* by Richard Hindmarsh of Griffith University, Brisbane, which appeared in *The Ecologist*, Vol.21, No.5, Sept/Oct 1991.

It is amusing to note that an Australian University is following the tradition of some of the older universities in the UK in producing a writer of great fairy tales in the mould of Lewis and Tolkein. For pure fantasy lies at the root of much of Richard Hindmarsh's review. It would take a letter of inordinate length to correct all the half-truths and other economies laid out by Mr Hindmarsh. I therefore take two examples; both concerned with the issue of "herbicide resistance", a development to which Mr Hindmarsh takes grave exception.

The article states: "Highest on the agricultural genetic engineering research and development agenda is the herbicide tolerant plant variety. It appears that 30-50 per cent of the industry's resources are directed at this product".

There does not appear to be any reliable, global data on the amount of money being spent on "herbicide resistance" research. However, analysis of published papers suggests that the industry is working on a very broad front to address a wide range of objectives other than herbicide resistance. This suggests that over 90 per cent of industry's expenditure is not in the area stated unless industry has found the long sought after touchstone of spending 120-130 per cent of available funds!

My own company, ICI Seeds, is spending some 2-3 per cent of its research budget on "herbicide resistance" work. We know that some of our competitors are spending at a slightly greater level; others are spending a good deal less and yet others are spending nothing at all. The weighted average must therefore be of the order of 1-2 per cent. A far cry from Mr Hindmarsh's mythical figure.

An expenditure in the range 1-5 per cent would also accord with the likely size of the potential market which is relatively small as the agricultural chemist and agricultural engineer have jointly captured most of the market for weed control.

Turning now to the caption under the photograph of the crop-spraying aircraft. This reads, in part: "The billions of dollars the biotech industry is spending on developing crop strains which can resist high dosages of herbicides"

Apart from the fact that the "billions of dollars" is a wild exaggeration, I can find no references in the literature to any work which has as its objective the development of crops strains "which can resist higher dosages of herbicides". Indeed the opposite appears to be the case. Such work as there is appears to be directed toward extending weed control systems using low rates of herbicides to crops where such systems cannot currently be used, and the farmer can only use older generation compounds. The logic of this research could be a significant reduction in the total quantity of herbicide active ingredients deployed.

A final thought. All crop plants are naturally tolerant of some herbicides. If this was not so then there would be no such thing as a selective weedkiller. Conventional plant breeders have, for years, ensured that this genetic effect is transferred from variety to variety. It now appears that "induced" herbicide tolerance might well be developed in some cases through traditional plant breeding techniques with no need of costly "genetic engineering". Presumably Mr Hindmarsh is averse to conventional plant breeding (?). Certainly his article would suggest this. Perhaps, Mr Hindmarsh could use his time to better advantage by telling us how he sees the future of agricultural production in a world in which the population is set to double over the next 50-60 years.

Yours sincerely K.T. Pike Public Affairs Manager ICI Seeds Fernhurst Haslemere Surrey GU27 3JE, UK

Richard Hindmarsh Replies...

Thank you for the flattering comparison of myself to the literature greats Lewis and Tolkein — I had never thought myself in their class but you have now given me inspiration. Nevertheless, I would have liked to have seen more substance in your claims of fantasy lying at the root of much of my article. I would have been most interested to examine a document of more length and accuracy, as I find your chosen examples rather unhelpful, and rather unworthy of the comparison to the literary greats.

For instance, I find your criticism of my finding that herbicide tolerance is the highest on the genetic engineering R&D agenda a bit overdone. The second reference I cited, the US Department of Agriculture, indicates that over 30 per cent of corporate proposals for environmental release of genetically engineered organisms are for herbicide tolerant plants. Perhaps this is where the confusion has emerged, and this point would need to be better qualified. However, I have not stated this with certainty, but have placed the caveat "It appears that" before the statistic of 30-50 per cent.

Other sources have indicated the area

of herbicide tolerance to be the highest focus of corporate attention at this stage. Perhaps not for your firm, but certainly for some of your competitors and, it would appear, the industry in general.

It would help, if you feel misrepresented, to supply any data in this area that you have, without breaching confidence criteria. I have researched this area for quite some years now and find it very difficult, as you have found also, to track down data on money spent (or percentages of R&D) on herbicide tolerance. You state that you know of some competitors' spending levels and state the weighted average is in the order of 1-2 per cent. Can you verify these figures and supply amounts? For it is one thing to criticize and another to verify your criticism.

Your second criticism is apparently not directed at me as the photographs and captions were supplied by The Ecologist. However, crop strains are being developed to resist high dosages of herbicides. For example, a very high level of tolerance is being bred into cotton in Australia to desensitize it to wind-drift of 2,4-D being applied to adjacent cereal crops.

Finally, I, in turn, find it amusing that you can finish your otherwise thoughtful letter with the rather fanciful notion that feeding the hungry of the world has something to do with the agricultural productivity of intensive farming systems.

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Jack Herer, author of . . . The Emperor Wears No Clothes

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This innovative new course is the first postgraduate Masters/diploma available in human ecology at a British university. Human ecology seeks to understand the relationship between people and the environment. The course explores interactions between population, resources, environment, development in ways which draw thoroughly on the sciences as well as the humanities, arts, theology, economics, etc. The course is intended to provide human ecological understanding for professionals from a wide range of backgrounds. It will give a global perspective, relevant to the problems of our time. It offers practical ways forward, including education, ecological economics, mangement, carrying capacity modelling, ethics, sustainable livelihoods, etc. Persons, normally with a good first university degree, are invited to send a large SAE for details for full-time study commencing October 1992 to: Dr. Ulrich E. Loening, Centre for Human Ecology, Institute of Ecology and Resource Management, Faculty of Science and Engineering, University of Edinburgh, 15 Buccleuch Place, Edinburgh EH8 9LN.



Gaunts House, a peaceful space for personal development, spiritual healing, environmental and related courses, sleeps up to 120 comfortably, offers a range of good facilities, excellent vegetarian catering, extensive, available countryside walks and visitor support.

Courses at Gaunts House and Ashton Lodge

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"First Heal Yourself" with Matthew Manning – 21st to 25th June – Love and humour release emotional and spiritual energies, realising one's healing power. Highly acclaimed. Paneurhythmy and the Teachings of Peter Deunov – with Maria and Milka from Bulgaria

- 6th to 12th July – inspirational music, movement and wisdom from a 20th Century Master. Paneurhythmy for beginners and experienced. A life enhancing, wonderful experience. Gaunts Experience and Renewal Weeks – an opportunty to spend time with a "family

group". Simple connection and renewal with the countryside and people of Gaunts. 15th to 22nd May; 6th to 13th June; 4th to 11th July; 2nd to 9th August; and each month.

"Dancing the Medecine Wheel" with Leo Rutherford – 16th to 20th September – contacting the inner child; healing in release; oneness not aloneness; melting into energy.
 "The Song in your Heart" with Barbara Swetina – 22nd to 25th October – joy and healing in song and dance. We offer ourselves in moving meditation and celebration.
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ASHTON LODGE RETREAT HOUSE AND SMALL COURSE CENTRE Countryside accomodation and workshop/meditation studio; excellent

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We welcome enquiries from individuals and groups for Gaunts House, Ashton Lodge, the Guest Cottage and High Lea. Enquiries, leaflets, information, course list, bookings – please contact – GAUNTS HOUSE, WIMBORNE, DORSET BH21 4JQ, or telephone 0202 841522



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COURSES



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The Institute of Commonwealth Studies invites applications from students interested in the following areas of research:

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- Southern Africa
- Australian History and Politics
- Commonwealth Literature

Applications are also invited from those wishing to register for the MA in Area Studies (the Commonwealth) and the MA in Area Studies (Australia).

Further details can be obtained from: The Administrative Secretary, Institute of Commonwealth Studies, 28 Russell Square, London WC1B 5DS. Tel: 071-580 5876. Fax: 071-255 2160

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The School for Advanced Urban Studies (SAUS), a centre of excellence in the fields of policy and management, is rapidly building up a portfolio of graduate courses to suit people working in the public, private and community sectors. In many cases, applications are accepted from nongraduates with relevant professional experience. In all cases, equal opportunities principles govern recruitment.

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For further information on either of the above or any other of the graduate courses offered by SAUS, contact: Graduate Course Secretariat, Centre for Social Management at SAUS, University of Bristol, Rodney Lodge, Grange Road, Bristol. BS8 4EA. UK. Tel: 0272 741117 Fax: 0272 737308

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Applicants should write to Miss L.V. Jones, Department of Politics, Leeds University, Leeds LS2 9JT, for an application form and further details. Applicants may also telephone direct on (0532) 334383.

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It focuses on resource allocation; the relationship between state and economy; the role of multinational corporations and international agencies; and questions of food security and sustainable development.

It is suitable for students seeking training from a political perspective in development theory and policy or those working in ministries or NGO's requiring further expertise in the management of state and business relations or in handling resource, environmental or food security policy.

For more information apply to: The MA Admissions Tutor, Department of Politics, University of Leeds, Leeds LS2 9JT, UK. Tel:0532 334382.

A limited number of grants and scholarships, which either fully or partially offset the cost of academic fees, are offered by the University of Leeds to overseas students on a competitive basis.

COURSES



University of Manchester INSTITUTE FOR DEVELOPMENT POLICY AND MANAGEMENT

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The Department of Anthropology offers the following degrees:

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Research supervision for Latin America, East/Central Africa, Europe (including Britain), South Asia, and Caribbean. (recognised for ESRC funding)

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CONFERENCES AND COURSES

FOURTH INTERAMERICAN FILM FESTIVAL of indigenous people, Peru, June 17-26, 1992. For details write to Comision Organizadore IV Festival Americano de Cine (CLACPI) Av. Juan de Aliaga 204, Lima 27, Peru, S. America. Phone or Fax: 51 14 61 7949.

THE PERENNIAL WISDOM. A weekend seminar with David Lorimer at Worthvvale Manor. Cornwall from 2-4 October 1992. All inclusive ful board cost £105.00. Details or booking direct to David Lorimer, Garden Cottage, Newhouse Farm, Northington Down, Alresford, Hants SO24 9UB Tel: 0962 734031.



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The Registrar, Wye College, University of London, Ashford, Kent TN25 5AH, UK Tel: (0233) 812401 Fax: (0233) 813320

> CO-PLANET 92 CONFERENCE, 22-26 July 1992 at Granada, Spain, Exhibition and Conference Centre. For details: Francisco Garcia, 46 Recogidas Street, 1st floor office 14, Granada 18005 Spain. Tel: 58 259962 or Fax: 58 259911.

> FOURTH ANNUAL CONFERENCE of the Society for Ecological Restoration, Waterloo, Ontario, Canada, 9-14 August 1992. Contact Laura Lee Hoefs, Conf. Committee, 1207 Seminole Highway, Madison, WI 53711, USA. Tel: 608 262 9547.

> FARM FORESTRY RESEARCH, a two day nonresidential conference held at the Royal Geographic Society, Kensington Gore, London, 30 Sept to 1st Oct 1992. Contact: Dr H.F. Evans, Forestry Commission, Forest Research Station, Alice Holt Lodge, Wrecclesham, Farnham, Surrey GU10 4LH. Tel: 0420 22255, Fax: 0420 23653

ENERGY POLICY FOR THE SOUTH WEST

A seminar at Dartington, 5th June 1992. Speakers will present viewpoints of mainstream and alternative energy suppliers, local authorities, campaigners.Advance booking please

Details from: Green Paths, Foxhole, Dartington, Totnes, Devon TO9 6EB. (0803 867075 or 071-485 9981).

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